Nova Scotia
RESOURCE ATLAS

Nova Scotia
Department of Development

Honourable Roland J. Thornhill
Minister

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To the Reader

This collection of maps and statistics has been drawn together to present within one cover the essential facts about Nova Scotia, its people, and its resources. It will be of value to students, educators, resource workers, and investors alike. It has been published, not only to illustrate the state of Nova Scotia's economy in the mid-1980's, but also to encourage an awareness of this province's enormous potential for future development.

For nearly four hundred years, Nova Scotians have been engaged in the adventure of discovering and developing the resources of their sea-girt home. If this atlas conveys one overall impression through its maps, its text, and its illustrations, it is a clear sense of the dynamism and vitality of that continuing adventure. Ours is a rugged, challenging land. She rewards richly those who will rise to her challenge.

I hope that this atlas will convey to its readers a sense of that challenge and of those rewards, and that they, too, will accept the invitation to become participants in Nova Scotia's proud history and heritage.

Roland Thornhill

Honorable Roland J. Thornhill
Minister of Development

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Introduction

Geography is the science that describes the form and physical features of the earth, its natural and political divisions, its climates, peoples, and products. As collections of maps and commentaries illustrating these types of information, atlases are geographic portraits of selected territories. Like other portraits, they provide objective data about their subjects, as well as insight into the purposes and perceptions of the artists (cartographers, writers, etc.) who produced them and the patrons (governments, institutions, etc.) who commissioned them.

This atlas is a portrait of Nova Scotia. Commissioned by the provincial government, it is intended as an accessible reference work for Nova Scotians and for others who may wish to share in the future of this Province. The editors hope that readers may come to appreciate not only the facts and statistics, but also something of the particular beauty and spirit which make Nova Scotia a very special place for those who live here.

Physical Features: No other factor has influenced Nova Scotia and its people more than the sea. Jutting into the North Atlantic, the rugged peninsula which forms Canada's easternmost mainland province is washed by the tidal waters of the ocean, the Bay of Fundy, the Northumberland Strait, and the Gulf of St. Lawrence. Only the narrow (22 km/14 mi.) Isthmus of Chignecto links it to continental North America. No part of its 55,491 square kilometers (21,425 sq. mi.) is more than 56 km (35 mi.) distant from the coast.

Nova Scotia's landscapes are as varied as the moods of the sea that surrounds it. The gentle, fertile slopes and sandy beaches of the Northumberland Shore contrast vividly with the rugged Atlantic coast to the south. Bordering the Bay of Fundy, rocky promontories separate wide river valleys, salt marshes, and spreading dykelands, while, to the northeast, the dramatic highland plateau of Cape Breton Island rises more than 550 m (1800 ft.) above the tireless waves.

Historical Notes: Prior to European settlement, Nova Scotia was populated by the Algonquian-speaking Micmac people who hunted and fished along the coastal bays and river valleys. Norse voyagers were the first European visitors, landing about 1000 A.D. Following John Cabot's enthusiastic description of the rich fishing grounds in 1497, increasing numbers of French, British, and Portuguese vessels came to the area.

France took the first serious interest in the possibility of colonial development in *Acadie*, establishing a settlement at Port Royal in 1605. There, and at Grand Pré on the Minas Basin and Beaubassin near present-day Amherst, an Acadian agrarian society developed and spread, rising to a peak population of about 15,000 by the 1750's.

Although Britain also laid claim to the territory, under the name of Nova Scotia or "New Scotland", as early as 1621, lasting British settlement did not occur until Halifax was founded in 1749 as a military counterbalance to the French fortress of Louisbourg on Cape Breton Island. In 1753, some 1,450 German Protestants were granted lands at Lunenburg. Two years later, political pressure from the New England Colonies and a renewal of hostilities between England and France in the Seven Years' War led to the expulsion of the neutral Acadians, an event memorialized in Longfellow's poem "Evangeline". The fall of Louisbourg in 1758 and of Québec in 1759 ended the proprietary role of France in Canada.

The vacated lands of the Acadians were soon re-occupied. New England planters moved into Cumberland County in the early 1760's and Ulstermen from Northern Ireland settled around Truro at the same time. Later, numbers of exiled Acadians returned to the south coast and the Annapolis Valley. In 1773, the ship "Hector" brought the first of many Scots to the Northumberland Shore, and by 1774 about 1,000 Yorkshiremen had settled in Cumberland County.

Following the American Revolution, 20,000 Loyalists came to Nova Scotia. Cape Breton Island and New Brunswick were established as separate colonies in 1784, although Cape Breton Island was re-annexed to Nova Scotia in 1820.

Nova Scotia was one of the four original provinces which entered the Confederation of the Dominion of Canada in 1867, providing the new nation with its principal international port, at Halifax, and important agriculture, forestry, fishing, and ship-building industries.

Government: The modern Government of Nova Scotia consists of a Lieutenant-Governor, representing the Crown, and a fifty-two member Legislative Assembly. The Assembly is elected by the people for a term five years, but may be dissolved at any time by the Lieutenant-Governor on the advice of the Premier of the Province, who is traditionally the leader of the majority party in the Assembly. Although, legally, executive power is vested in the Lieutenant-Governor, practically it is exercised by the Executive Council or provincial cabinet, whose members are appointed from among the members of the Assembly on the nomination of the Premier.

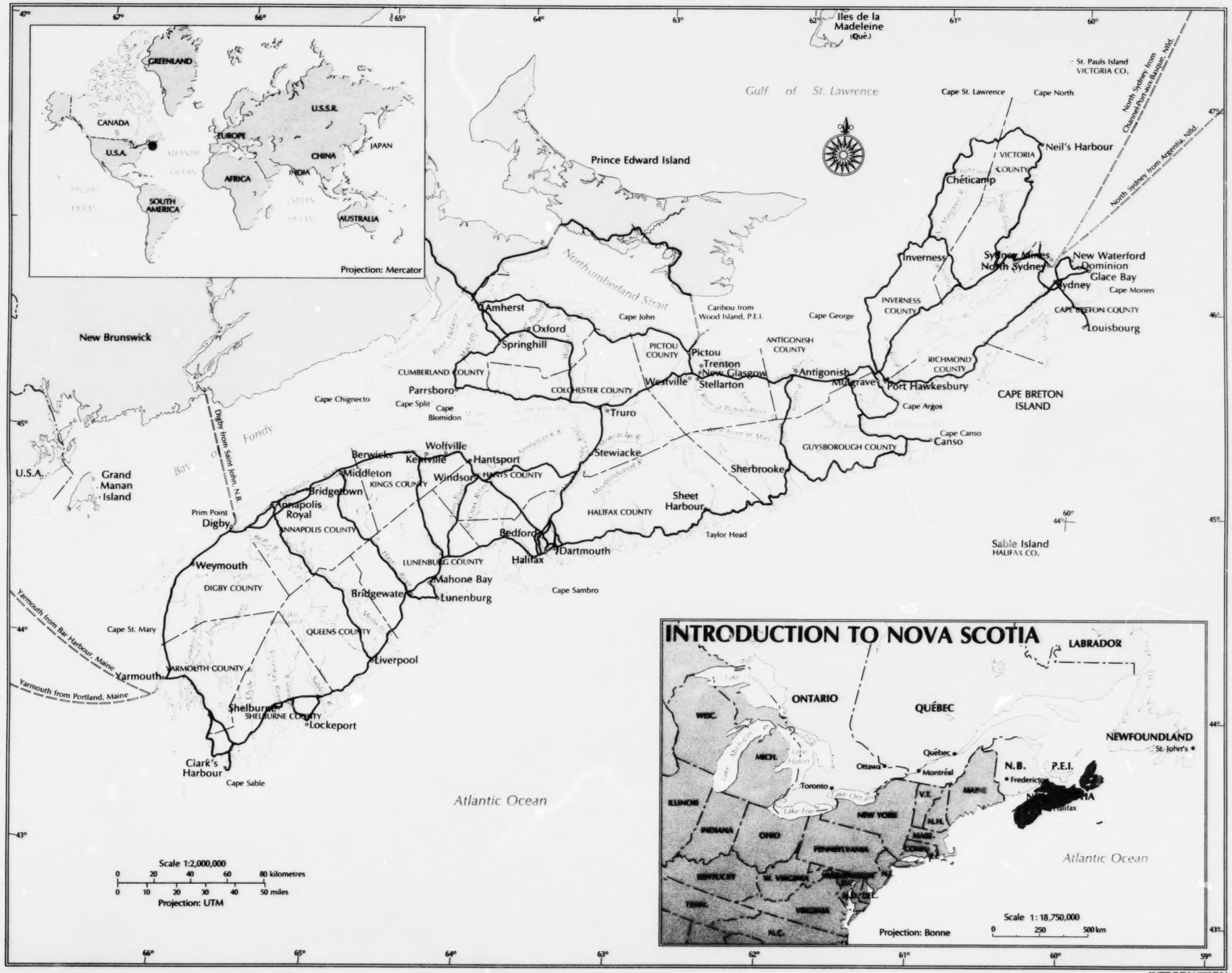
As a Canadian province, Nova Scotia is governed by the Constitution of Canada, the jurisdiction of which includes the Charter of Rights and Freedoms, and the regulation of currency, banking, trade and commerce, and national defence, and all other fields not assigned exclusively to the provinces. Education, municipal institutions, property and civil rights, and the administration of natural resources are among the areas reserved to provincial jurisdiction. Nova Scotia is currently represented in the Parliament of Canada by 11 elected members of the House of Commons and by 10 appointed Senators.

At the municipal level, government is carried on in 3 cities, 39 towns, and 24 rural municipalities. The latter conform to the boundaries of the counties shown on the adjacent map, although six of the 18 counties have two rural munipalities each. Local jurisdiction extends to matters such as zoning and land-use planning.

About This Atlas: The Nova Scotia Resource Atlas has been designed to facilitate use both by students and by general readers. The first four sections deal with Nova Scotia's four principal resource sectors — Forestry, Agriculture, Fisheries, and Geology. Information in each of these sections indicates the principal locations and economic importance of specific resources and resource-based activities.

The final section deals with what might be termed the socio-economic systems which Nova Scotians have developed to permit effective utilization of the resources of their province. Some of these, such as water and energy supplies, manufacturing, transportation and exports, are fundamental parts of the infrastructure of any modern economy. Others, such as tourism, recreation, health and educational services, reflect particular physical, social, and cultural characteristics of Nova Scotia.

Although each map presents a specific field of information and can stand on its own, there are frequent cross-references between sections. In addition, the last few pages of the atlas consist of empty outline maps printed on tracing paper, on which readers may make their own correlations of geographic data. The aim of the cross-references and the outline maps is to encourage readers to explore the complex web of inter-relationships which exists between terrain, resources, and human activity and makes up the dynamic economy of contemporary Nova Scotia.


Projection: Mercator
GREENLAND
CANADA
U.S.A.
SOUTH AMERICA
EUROPE
U.S.S.R.
AFRICA
INDIA
CHINA
JAPAN
AUSTRALIA
Gulf of St. Lawrence
Prince Edward Island
Northumberland Strait
New Brunswick
Nova Scotia
Atlantic Ocean
Fundy
Bay of
Îles de la Madeleine (Qué.)
St. Pauls Island VICTORIA CO.
Cape St. Lawrence
Cape North
North Sydney from Channel,Port-aux-Basques, Nfld.
North Sydney from Argentia, Nfld.
Neil's Harbour
VICTORIA COUNTY
Chéticamp
Inverness
Sydney Mines
North Sydney
New Waterford
Dominion
Glace Bay
Sydney
Cape Morien
INVERNESS COUNTY
CAPE BRETON COUNTY
Louisbourg
Caribou from Wood Island, P.E.I.
Cape George
Cape John
Amherst
Oxford
Springhill
PICTOU COUNTY
Pictou
Trenton
New Glasgow
Stellarton
ANTIGONISH COUNTY
Antigonish
Mulgrave
Port Hawkesbury
RICHMOND COUNTY
CAPE BRETON ISLAND
CUMBERLAND COUNTY
Parrsboro
Westville
COLCHESTER COUNTY
Truro
Cape Chignecto
Cape Split
Cape Blomidon
Cape Argos
Cape Canso
Canso
GUYSBOROUGH COUNTY
Stewiacke
Sherbrooke
Wolfville
Kentville
Hantsport
Windsor
HANTS COUNTY
KINGS COUNTY
Berwick
Middleton
Bridgetown
Annapolis Royal
ANNAPOLIS COUNTY
Digby from Saint John, N.B.
Grand Manan Island
U.S.A.
Prim Point
Digby
HALIFAX COUNTY
Sheet Harbour
Taylor Head
Bedford
Halifax
Dartmouth
Sable Island HALIFAX CO.
LUNENBURG COUNTY
Mahone Bay
Lunenburg
Bridgewater
Cape Sambro
Weymouth
DIGBY COUNTY
Yarmouth from Bar Harbour, Maine
Yarmouth from Portland, Maine
Cape St. Mary
QUEENS COUNTY
Liverpool
YARMOUTH COUNTY
Yarmouth
Shelburne
SHELBURNE COUNTY
Lockeport
Ciark's Harbour
Cape Sable
Scale 1:2,000,000
0 20 40 60 80 kilometres
0 10 20 30 40 50 miles
Projection: UTM
INTRODUCTION TO NOVA SCOTIA
LABRADOR
ONTARIO
QUÉBEC
NEWFOUNDLAND
St. John's
Québec
Ottawa
Montréal
Toronto
N.B.
P.E.I.
Fredericton
Halifax
WISC.
MICH.
ILLINOIS
INDIANA
OHIO
KENTUCKY
W. VIRGINIA
VIRGINIA
TENN.
N.C.
PENNSYLVANIA
NEW YORK
VT.
N.H.
MAINE
MASS.
CONN.
R.I.
N.J.
DEL.
Lake Michigan
Lake Huron
Lake Ontario
Lake Erie
Atlantic Ocean
Scale 1:18,750,000
0 250 500 km
Projection: Bonne

Natural History Theme Regions

"Natural history" is a somewhat old-fashioned sounding, but useful, term which originated with early field biologists who sought to describe the wide range of their interests. These researchers, or naturalists, tried to understand the overall connections of the natural world, even while pursuing detailed studies of particular parts of it. What they meant by "natural history" was very close to the modern science of ecology: that is, the study of the web of mutual relationships between organisms and their environment. From the perspective of natural history, all the natural elements of an area — its geology, topography, climate, plants and animals — are interrelated.

The idea of natural history regions has recently been revived in North America. The approach emphasizes those aspects of an area's natural history which are typical, focussing on processes and interrelationships: how a landscape develops; why a particular environment supports certain living species. In the phrase which has come to be the key test of relevance, theme regions are concerned with "the common and the conspicuous".

Theme Regions: A "theme region" is a distinctive area containing common patterns of landform and vegetation which have developed through a particular combination of physical and biological factors. The theme region approach seeks to integrate the varied natural elements of an area to form a basis for the exploration and interpretation of its natural diversity. Where appropriate, Regions may be divided into Districts, and these, in turn, into Units, to designate specific, localized characteristics. Thus, for example, the Avalon Uplands Region (300) of northern Nova Scotia is broken into three Districts identified by their dominant characteristics — i.e. Hardwood Plateau (310), Dissected Margins (320), and Fault Ridges (330). Of these, only the Hardwood Plateau is further subdivided into three Units (311-313) whose names indicate the particular location of each. In the form of abbreviated notes, the description of the Avalon Uplands Region can be summarized as follows:

300 AVALON UPLANDS
- **310 Hardwood Plateau**
  - 311 Cobequid Hills
  - 312 Pictou-Antigonish Highlands
  - 313 North Bras d'Or Uplands
- **320 Dissected Margins**
- **330 Fault Ridges**

This cataloguing system can be used to present the entire hierarchy of Nova Scotia Regions, Districts, and Units.

The adjacent map shows the nine natural theme regions of Nova Scotia.

Generally, the boundaries of the theme regions are easily identified by abrupt topographic breaks which are caused by the underlying geological structure. In two cases, however, the boundaries are ill-defined. In the Atlantic Coast Region, wind and salt spray prevent normal growth of trees. Headlands and islands are often barren. Inland, spruce is the most hardy tree and may dominate the forest up to 5 km (3 miles) from the coast. As conditions moderate inland, maple, birch, and other species appear, according to local conditions. However, the inland boundary of this region varies considerably, and cuts across all geological and topographic features. In a somewhat similar situation, extreme exposure to wind stunts tree growth in the Highland Taiga Region on the most elevated parts of the Cape Breton Highlands. As with the coastal region, the boundaries of this wind dominated taiga do not correspond reliably to topographic features.

Districts: Various environmental criteria are used to define districts. Each District has one defining characteristic which is usually an element of the physical environment — most often bedrock geology. Surface materials, landforms, and vegetation are also used in some circumstances, and the dominant factor by which a district is defined may be closely linked with other environmental conditions.

For example, within the Carboniferous Lowlands (Theme Region 500), a very distinct district (District 540) is defined by the presence of Kingsville soils. These soils are derived from the Scotch Village Formation, in which flat-lying rock strata give a very level surface. The formation produces heavy soils which have a very slow internal drainage. As a result, large organic deposits (peat bogs) have accumulated.

Units: Within a District, a significant change in the dominant environmental factors can be the basis for defining distinct Units. For example, within the Atlantic Coast Region (Theme Region 800), a District dominated by abundant coastal sediment (District 830) is recognized. Within it, there are four Units: 831 (long shallow estuaries with extensive salt marshes); 832 (eroding drumlins, islands and isolated sand beaches); 833 (shallow, large estuaries, salt marshes, sand beaches); 834 (coastal islands). The Units have many similarities, but at least one major factor is different in each.

NOVA SCOTIA THEME REGIONS

100 - Plateau Taiga: The Cape Breton Highlands plateau surface, at an elevation of over 500 metres (1700 feet) is the highest part of Nova Scotia. Its height results in a harsh climate with extreme wind exposure and a very short growing season. Dwarf spruce-taiga, a combination of dense spruce, blanket bogs and barrens, dominates the vegetation, providing summer moose habitat. There are no subdivisions into Districts or Units.

200 - Highlands: Northern Cape Breton Island is dominated by a highland block of ancient metamorphic and granitic rocks. On the southward sloping plateau surface, generally above 300 m (1000 feet) the short growing season and severe climate limit forest growth to balsam fir. Deep valleys dissecting the block contain damp, cool, deciduous forests.

300 - Avalon Upland: Consisting of a series of upland areas across the northern part of the province, this Region experiences more severe winters, with greater amounts of precipitation and shorter growing seasons than the surrounding lowlands, though conditions are less harsh than in the Cape Breton Highlands. This climate is reflected in the dominant hardwood forest type — an association of sugar maple, yellow birch, and fir.

400 - Atlantic Interior: Inland from the coastal forest, the immediate climatic influence of the ocean is replaced by slightly warmer summers and cooler winters with less wind exposure. Across the planed surface of the old, hard rocks flow some of Nova Scotia's longest rivers. Most of the province's lakes have been created by glaciation on this relatively flat surface. Vegetation varies from mature spruce/hemlock/pine forests common on the Kejimkujik Drumlins to the heath vegetation of the Granite Barrens.

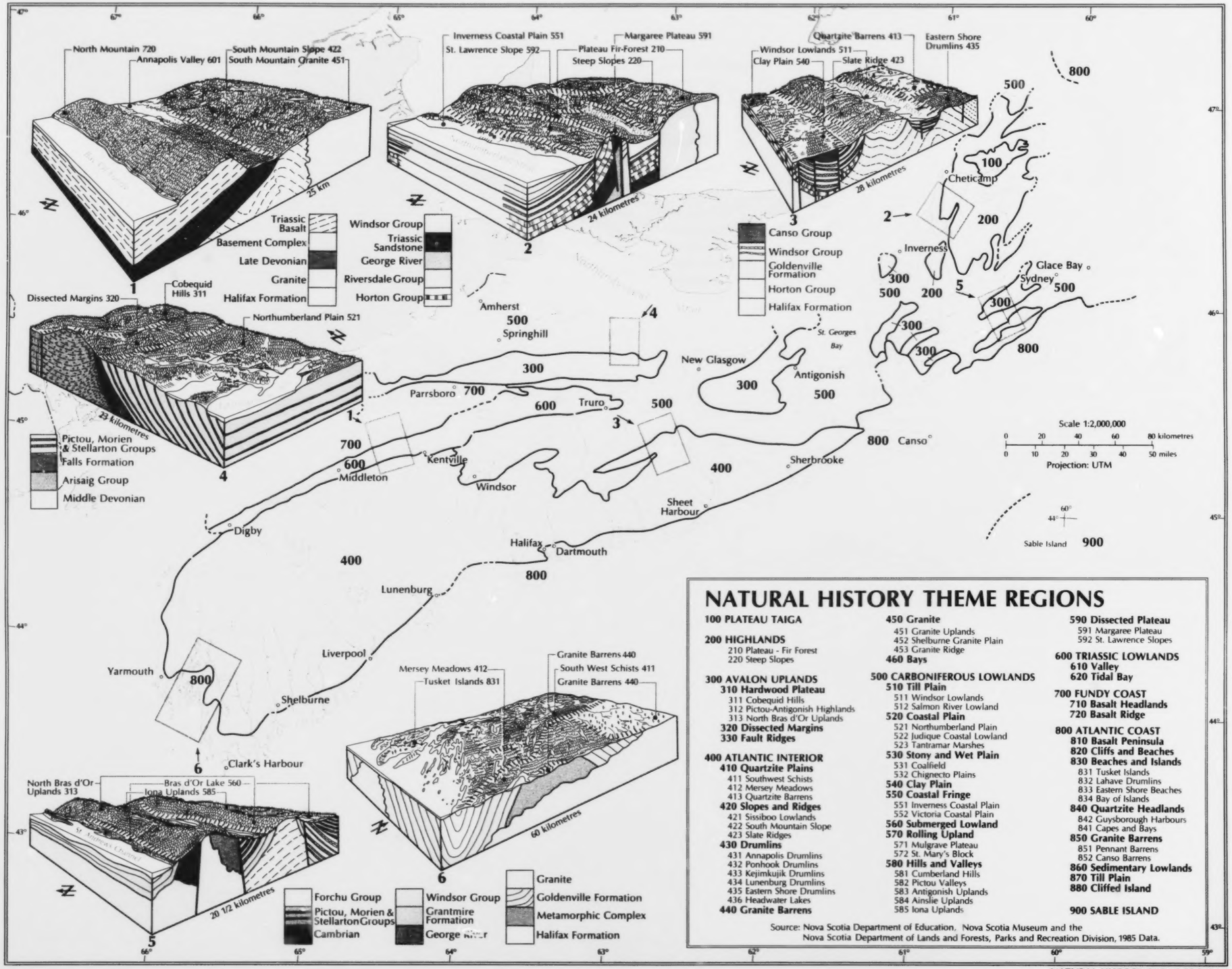
500 - Carboniferous Lowlands: Lowland Nova Scotia consists mainly of Carboniferous sedimentary rocks covered by deep soils. Many of the rivers of this Region flow in valleys eroded from the unresistant Windsor Group rocks. Horton Group sandstones are more resistant, and form higher ground on the eastern mainland and on Cape Breton Island.

600 - Triassic Lowlands: Between the North and South Mountains, soft Triassic sandstones have been eroded to form an open-ended valley. The shelter of the mountains provides the most favoured climate in Nova Scotia, with a growing season of 195 days. Where the valley is open to the sea at its eastern and western ends, the inland climate is moderated by marine influence. Natural forest trees include red spruce, hemlock, pine, oak and maple, while bogs and salt marshes are also found. Mudflats are rich in life and support large flocks of migratory shorebirds.

700 - The Fundy Coast: In the central sections of the Bay of Fundy, the coastal zone is protected from the climatic extremes found in the Atlantic Coastal Region. Cape Blomidon on the south coast and Economy Mountain on the north coast mark the inland limits of this oceanic influence. The Fundy Coast is a climatic and vegetative transition zone dominated by basaltic rocks. Coastal sediments are locally abundant, forming small areas of salt marsh, gravel beaches, and mudflats. Wide intertidal platforms have been eroded in both basaltic and sedimentary rocks, giving a variety of coastal habitats.

800 - Atlantic Coast: Exposure to winds from the Atlantic dominates coastal environments from Digby Neck to Scatarie Island. A coastal forest is found throughout, and its inland extension marks the regional boundary. Headlands are frequently barren. Where erosion is reshaping coastal areas, beaches, marshes, and waterfowl habitat are found. Seabird nesting colonies and marine mammals are common on and around the coastal islands.

900 - Sable Island: Sable Island is almost entirely composed of sand. Constant winds, salt spray, and shifting sand form an environment which is hostile to trees and shrubs. Climatic extremes of winter and summer are moderated by the oceanic influence. The island is a prolific breeding ground for some marine mammals and sustains an introduced population of horses.



NATURAL HISTORY THEME REGIONS

100 PLATEAU TAIGA

200 HIGHLANDS
- 210 Plateau - Fir Forest
- 220 Steep Slopes

300 AVALON UPLANDS
- **310 Hardwood Plateau**
  - 311 Cobequid Hills
  - 312 Pictou-Antigonish Highlands
  - 313 North Bras d'Or Uplands
- **320 Dissected Margins**
- **330 Fault Ridges**

400 ATLANTIC INTERIOR
- **410 Quartzite Plains**
  - 411 Southwest Schists
  - 412 Mersey Meadows
  - 413 Quartzite Barrens
- **420 Slopes and Ridges**
  - 421 Sissiboo Lowlands
  - 422 South Mountain Slope
  - 423 Slate Ridges
- **430 Drumlins**
  - 431 Annapolis Drumlins
  - 432 Ponhook Drumlins
  - 433 Kejimkujik Drumlins
  - 434 Lunenburg Drumlins
  - 435 Eastern Shore Drumlins
  - 436 Headwater Lakes
- **440 Granite Barrens**
- **450 Granite**
  - 451 Granite Uplands
  - 452 Shelburne Granite Plain
  - 453 Granite Ridge
- **460 Bays**

500 CARBONIFEROUS LOWLANDS
- **510 Till Plain**
  - 511 Windsor Lowlands
  - 512 Salmon River Lowland
- **520 Coastal Plain**
  - 521 Northumberland Plain
  - 522 Judique Coastal Lowland
  - 523 Tantramar Marshes
- **530 Stony and Wet Plain**
  - 531 Coalfield
  - 532 Chignecto Plains
- **540 Clay Plain**
- **550 Coastal Fringe**
  - 551 Inverness Coastal Plain
  - 552 Victoria Coastal Plain
- **560 Submerged Lowland**
- **570 Rolling Upland**
  - 571 Mulgrave Plateau
  - 572 St. Mary's Block
- **580 Hills and Valleys**
  - 581 Cumberland Hills
  - 582 Pictou Valleys
  - 583 Antigonish Uplands
  - 584 Ainslie Uplands
  - 585 Iona Uplands

590 Dissected Plateau
- 591 Margaree Plateau
- 592 St. Lawrence Slopes

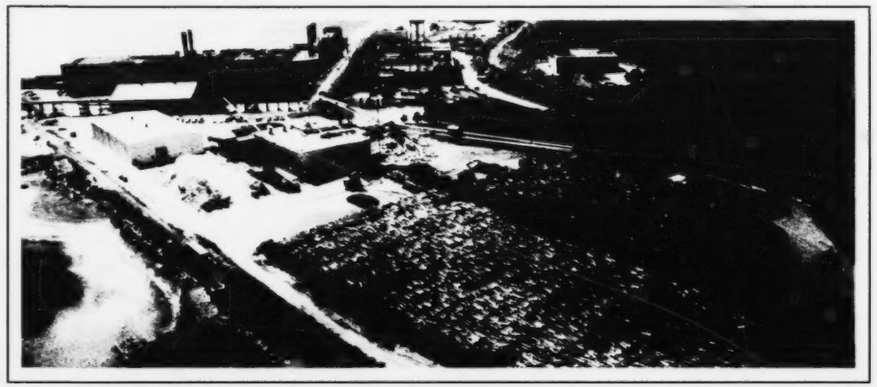
600 TRIASSIC LOWLANDS
- **610 Valley**
- **620 Tidal Bay**

700 FUNDY COAST
- **710 Basalt Headlands**
- **720 Basalt Ridge**

800 ATLANTIC COAST
- **810 Basalt Peninsula**
- **820 Cliffs and Beaches**
- **830 Beaches and Islands**
  - 831 Tusket Islands
  - 832 Lahave Drumlins
  - 833 Eastern Shore Beaches
  - 834 Bay of Islands
- **840 Quartzite Headlands**
  - 842 Guysborough Harbours
  - 841 Capes and Bays
- **850 Granite Barrens**
  - 851 Pennant Barrens
  - 852 Canso Barrens
- **860 Sedimentary Lowlands**
- **870 Till Plain**
- **880 Cliffed Island**

900 SABLE ISLAND

Source: Nova Scotia Department of Education, Nova Scotia Museum and the Nova Scotia Department of Lands and Forests, Parks and Recreation Division, 1985 Data.



Three-quarters of Nova Scotia's land mass is covered by forest, of which about seventy per cent is comprised of softwoods — such indigenous species as balsam, spruce, pine, and hemlock — and the remainder of hardwoods such as birch, maple and oak. Pulpwood production (amounting to over 80% of Nova Scotia's overall forest production) accounted in 1984 for over six per cent of Canada's total output. In the same year, some 300 sawmills produced over 200 million board feet of lumber.

Forestry

Forest Cover

Of Nova Scotia's total land and water area of 5.5 million hectares (13.7 million acres), approximately three quarters (4.1 million hectares or 10.2 million acres) is forested. The 25% of the province's area which is nonforested consists, on the one hand, of lands cleared for economic uses such as agriculture and urban development, and, on the other hand, of bogs, wetlands, barrens, lakes and water flow channels — areas which are not well suited to development.

However, it is with the forested 75% that this map and the ones on the immediately following pages are concerned.

For purposes of resource management and planning, the forested areas of Nova Scotia have been divided into three Cover Types:

Softwood (over 75% of volume in softwood species)
Mixedwood (25%-75% of volume in softwood species)
Hardwood (less than 25% of volume in softwood species)

Of the total forested land class, Softwood cover comprises 52%, Mixedwood cover 28%, and Hardwood cover 20%.

For its small size, Nova Scotia is unusually rich in tree species. Straddling latitude 45°N, the province is a meeting ground for temperate hardwoods from the south, (e.g. maple, ash, and beech) and boreal softwoods from the north (e.g. spruce, fir, and pine). Within this transitional belt, such influences as the cold Labrador Current, the warm Gulf Stream, and differences in elevation and soil type are largely responsible for the predominance of one forest type over another in any particular location. The map facing this page indicates the degree to which these local conditions influence forest cover types.

While, under ideal conditions, these factors will generally combine to produce a characteristic species mix called the climax forest for that situation, under actual conditions there are natural interruptions which continually disturb the "balance of Nature", producing fairly orderly successions or waves of plant growth which tend toward stability. Thus, after a spruce budworm epidemic in Cape Breton, the dominant balsam fir is usually succeeded by paper birch. The dormant seeds of this light-demanding species respond to the increased sunlight and warmth filtering through the dying softwood canopy by sprouting profusely. A few decades later, the birch saplings provide shade for fir seedlings which eventually overtop and shade out the birch — except for a few tall ones which in time act as seed trees in the next cycle.

Each type of disturbance — fire, disease, land-clearing, logging — has its characteristic succession pattern which the skilled land manager must be able to recognize and to manipulate. Since the mid 1750's, humans have been the major force disturbing the forest landscape. The forest was diverse to begin with. Today one is hard-pressed to find a uniform forest type of more than 20 hectares (50 acres) anywhere in mainland Nova Scotia.

Tree species by percentage of total merchantable volume in the province are as follows:

Species	Total Merchantable Volume
Red/Black Spruce	26.1%
Balsam Fir	22.5%
Red Maple	13.5%
White Spruce	9.1%
Sugar Maple	5.6%
Yellow Birch	5.1%
White Pine	4.4%
Hemlock	3.0%
Aspen	2.9%
White Birch	2.8%
Beech	1.9%
Larch	1.1%
Red Oak	0.9%
Red Pine	0.4%
White Ash	0.3%
Other hardwoods	0.2%

Forest Inventories: Comprehensive information on the forests of the province is gathered through forest inventories and related studies. Because the forest is always changing in response to natural and human disturbances, these inventories must be repeated regularly.

By today's standards, early inventories were sporadic and crude. The first such survey took place in the summers of 1801 and 1802. It took the form of an extended walking tour of mainland Nova Scotia by naturalist Titus Smith Jr., who was commissioned by the colonial government to assess the potential for timber and naval stores.

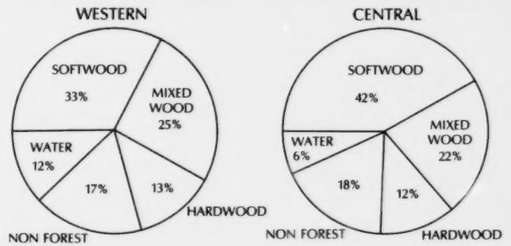
In 1910, Dr. B.E. Fernow, was commissioned by the Government of Canada to conduct the province's second forest survey. His report was published in 1912. A professional forester, Fernow based his work on scientific forestry principles. Despite the lack of aerial photographs and other modern inventory tools it proved to be remarkably accurate overall.

Between the years 1953 and 1957 the first detailed, comprehensive forest inventory of the province was carried out under the 1952 Dominion-Provincial Agreement of the Canada Forestry Act. This entailed both aerial photography and ground surveys, with timber cruising by Belanger and Bourget of the province of Québec.

Since 1965 this air/ground inventory process has been systematic and continuous, providing data on all woodland except Federal Crown lands, down to the municipality level. The process operates in two parallel programmes. A network of approximately 1,700 permanent sample plots, randomly placed across the province, is remeasured by Lands and Forests crews every five years to provide growth and drain data. At the same time, the Department orchestrates aerial photography and ground surveys on selected subdivisions on a 10-year rotation, to determine merchantable volume and other pertinent data. Since 1981, product information and data on non-merchantable volume have been gathered. All data are computerized, and available to the public. Wildlife habitat information is collected as part of the forest inventory as well.

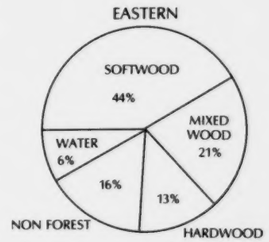
The eight provincial inventory subdivisions have been grouped into three regions: Western (Digby, Yarmouth, Shelburne, Queens, Lunenburg, Kings and Annapolis), Central (Halifax, Hants, Cumberland, Colchester), and Eastern (Pictou, Antigonish, Guysborough, Richmond, Inverness, Victoria and Cape Breton). At that level there is very little difference in forest composition between the three regions. The Western region has a greater proportion of water and non-forested land, and less softwood cover than the others, whereas the Central and Eastern regions are nearly identical. The proportion of mixedwood and hardwood types remain very similar in all regions. However, in the Eastern region this ratio is being dramatically altered due to insect infestation of softwoods on Cape Breton Island.

PERCENT AREA CLASSIFICATION BY REGION



1 900 000 hectares

1 700 000 hectares

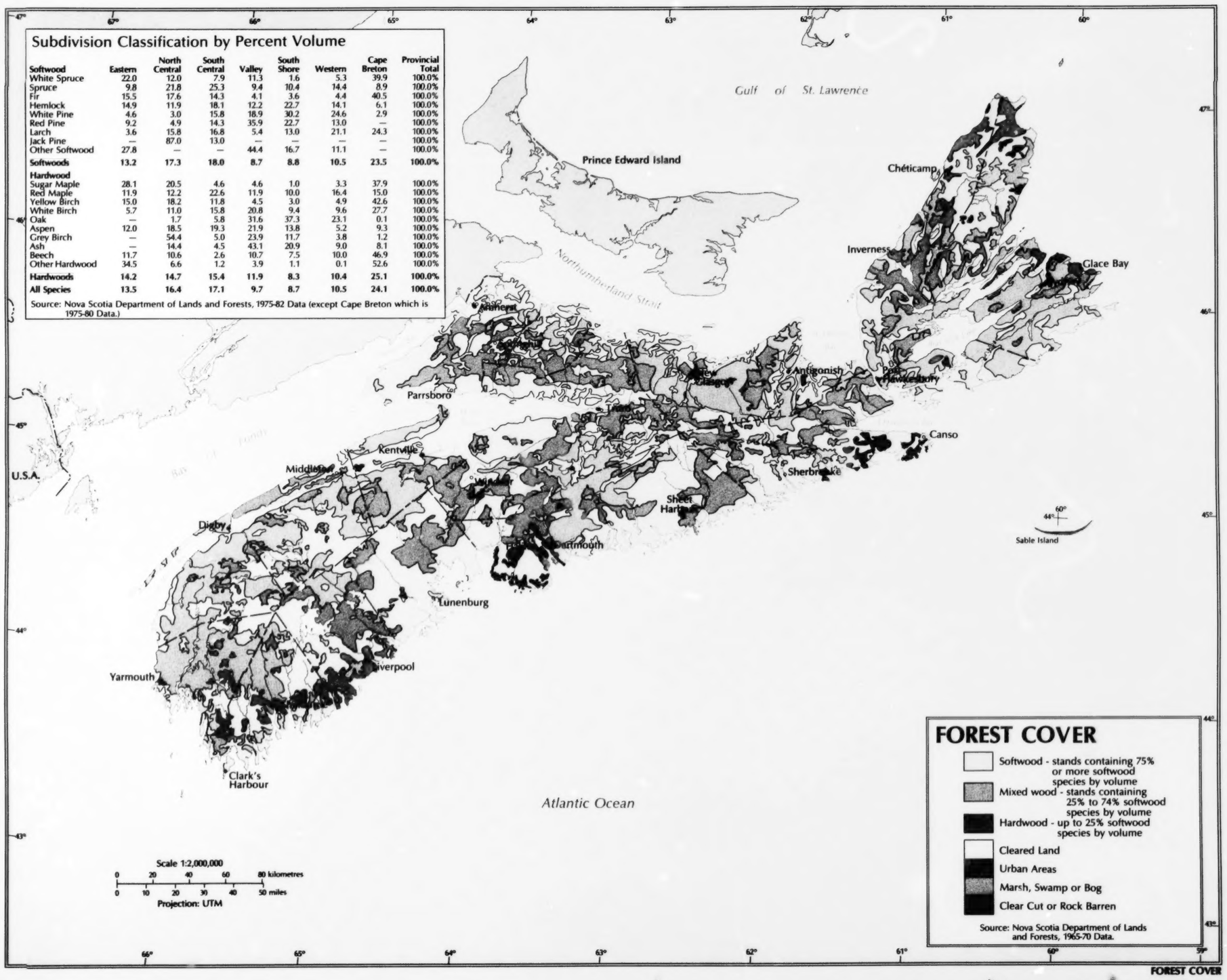


1 900 000 hectares

Subdivision Classification by Percent Volume

Softwood	Eastern	North Central	South Central	Valley	South Shore	Western	Cape Breton	Provincial Total
White Spruce	22.0	12.0	7.9	11.3	1.6	5.3	39.9	100.0%
Spruce	9.8	21.8	25.3	9.4	10.4	14.4	8.9	100.0%
Fir	15.5	17.6	14.3	4.1	3.6	4.4	40.5	100.0%
Hemlock	14.9	11.9	18.1	12.2	22.7	14.1	6.1	100.0%
White Pine	4.6	3.0	15.8	18.9	30.2	24.6	2.9	100.0%
Red Pine	9.2	4.9	14.3	35.9	22.7	13.0	—	100.0%
Larch	3.6	15.8	16.8	5.4	13.0	21.1	24.3	100.0%
Jack Pine	—	87.0	13.0	—	—	—	—	100.0%
Other Softwood	27.8	—	—	44.4	16.7	11.1	—	100.0%
Softwoods	**13.2**	**17.3**	**18.0**	**8.7**	**8.8**	**10.5**	**23.5**	**100.0%**
Hardwood								
Sugar Maple	28.1	20.5	4.6	4.6	1.0	3.3	37.9	100.0%
Red Maple	11.9	12.2	22.6	11.9	10.0	16.4	15.0	100.0%
Yellow Birch	15.0	18.2	11.8	4.5	3.0	4.9	42.6	100.0%
White Birch	5.7	11.0	15.8	20.8	9.4	9.6	27.7	100.0%
Oak	—	1.7	5.8	31.6	37.3	23.1	0.1	100.0%
Aspen	12.0	18.5	19.3	21.9	13.8	5.2	9.3	100.0%
Grey Birch	—	54.4	5.0	23.9	11.7	3.8	1.2	100.0%
Ash	—	14.4	4.5	43.1	20.9	9.0	8.1	100.0%
Beech	11.7	10.6	2.6	10.7	7.5	10.0	46.9	100.0%
Other Hardwood	34.5	6.6	1.2	3.9	1.1	0.1	52.6	100.0%
Hardwoods	**14.2**	**14.7**	**15.4**	**11.9**	**8.3**	**10.4**	**25.1**	**100.0%**
All Species	**13.5**	**16.4**	**17.1**	**9.7**	**8.7**	**10.5**	**24.1**	**100.0%**

Source: Nova Scotia Department of Lands and Forests, 1975-82 Data (except Cape Breton which is 1975-80 Data.)



FOREST COVER

Land Capability and Forest Industries

All lands in Nova Scotia have been divided into forest capability classes under the Canada Land Inventory system, based on their inherent ability to grow commercial wood fibre. This ability is a function of soil quality, depth, and drainage, as well as degree and direction of slope. Exposure to salt spray or strong winds, and past land use practices may also be influential.

Primarily because of climatic restrictions, there is no Class 1 or Class 2 land in Nova Scotia. Of the next five classes, approximately 39% falls in Classes 3 and 4, another 40% in Class 5, and approximately 21% in Classes 6 and 7.

Associated with each capability class is a productivity range based on the softwood species on the site at the time of measurement and expressed in terms of gross merchantable volume — the total wood volume in trees of commercial size, including stump and top, before deductions related to processing are calculated. The adjacent map indicates the provincial distribution of land capability classes for forestry, as well as locating the sites of sawmills and other forest-related industries.

Land Capability: Class 3 is the highest capability class mapped in Nova Scotia, with a productivity range exceeding 6.3 cubic metres per hectare annually. For the province as a whole, the average mean annual increment for all productive forestry sites is 3.5 cubic metres per hectare **annually**. This is a good indication of the moderate limitations to forest growth related to climate, soil moisture, fertility, and soil depth which are typical of the Class 4 and 5 soils (3.6 - 4.9 and 2.2 - 3.5 m^3/ha a respectively) which cover the majority of the province. Areas mapped as Class 6 and 7 (0 - 2.1 m^3/ha a) are considered non-productive for forestry and are associated with severe coastal exposure, shallow soils, and poor drainage.

Generally speaking, the map shows that the greatest concentrations of mill sites are found in areas of Class 3 and 4 land, reflecting the greater productivity of the forest in such locations. The presence of forest-related industries even in Class 6 and 7 locations is not an anomaly, however. Small sawmills serving local markets can spring up wherever there is a human settlement, drawing on forest plots which may be of excellent quality, although too small to be indicated on a map of this scale.

Forest Industries: The forest resources of Nova Scotia support a well developed and varied forest industry. Currently employing a labour force of 8,000 direct and about 16,000 indirect or "spin-off" jobs, as well as a considerable level of unrecorded activity by private land owners for domestic purposes, the industry produces a broad range of products, from pulp, newsprint, and paperboard, to hardboard and various lumber products. This is accomplished by utilizing an annual harvest in excess of 3.7 million cubic metres (1.7 million cords), or approximately 1.1 m^3/ha (the third highest productivity rate among the ten Canadian provinces). This annual industrial harvest represents an increase of 58% over the past two decades. In addition, the province produces approximately 1.6 million Christmas trees and over 52,000 litres of maple syrup annually.

In 1984, there were 407 sawmills operating in Nova Scotia, of which 44 each produced over one million board feet of lumber. The majority (298) of these mills produced lumber only, but the total includes producers of boxwood, laths, shingles, and a variety of other specialty products.

The pulp and paper segment of the industry in 1983 included five operations: a kraft pulpmill at Abercrombie Point, Pictou County; a sulphite pulpmill and a newsprint mill at Point Tupper, on the Strait of Canso; a newsprint mill at Brooklyn, Queens County; a paperboard mill at Hantsport, near Windsor; and a hardboard plant at East River, Lunenburg County.

VOLUME OF PRODUCT AT ROUNDWOOD LEVEL - 1983
By Ownership Class and County of Origin
Solid Wood in cubic metres

COUNTY		ALL OWNERS Sawlog m³	ALL OWNERS Round m³	ALL OWNERS Total m³	PROVINCIAL CROWN Sawlog m³	PROVINCIAL CROWN Round m³	PROVINCIAL CROWN Total m³	LARGE PRIVATE OWNERS Sawlog m³	LARGE PRIVATE OWNERS Round m³	LARGE PRIVATE OWNERS Total m³	SMALL PRIVATE OWNERS Sawlog m³	SMALL PRIVATE OWNERS Round m³	SMALL PRIVATE OWNERS Total m³
Pictou	(S)	**59 849**	**129 230**	**189 079**	**—**	**33 528**	**33 528**	**9 261**	**38 215**	**47 476**	**50 588**	**57 487**	**108 075**
	(H)	1 166	14 574	15 740	—	6 577	6 577	2 075	15 852	17 927	- 909	- 7 855	- 8 764
Antigonish	(S)	**12 003**	**148 412**	**160 415**	**—**	**17 586**	**17 586**	**—**	**26 518**	**12 003**	**104 308**	**116 311**	
	(H)	6 549	5 014	11 563	—	4 376	4 376	210	1 655	1 865	6 339	- 1 017	5 322
Guysborough	(S)	**16 063**	**176 701**	**192 764**	**130**	**17 060**	**17 190**	**16 717**	**53 398**	**70 115**	**- 784**	**106 243**	**105 459**
	(H)	4 560	7 430	11 990		7 110	7 110	112	10 830	10 942	4 448	- 10 510	- 6 062
Colchester	(S)	**72 231**	**57 703**	**129 934**	**19 191**	**2 358**	**21 549**	**32 518**	**21 343**	**53 861**	**20 522**	**34 002**	**54 524**
	(H)	3 718	18 169	21 887	65	3 704	3 769	1 731	11 770	13 510	1 922	2 686	4 608
Cumberland	(S)	**92 596**	**20 488**	**113 084**	**1 160**	**993**	**2 153**	**67 684**	**41 958**	**109 642**	**23 752**	**- 22 463**	**1 289**
	(H)	3 090	1 875	4 965	—	742	742	2 505	5 978	8 483	585	- 4 845	- 4 260
Hants	(S)	**123 363**	**39 900**	**163 263**	**1 272**	**1 327**	**2 599**	**58 754**	**37 040**	**95 794**	**63 337**	**1 533**	**64 870**
	(H)	4 989	20 634	25 623	—	1 682	1 682	12 742	14 921	27 663	- 7 753	4 031	- 3 722
Halifax	(S)	**143 845**	**47 215**	**191 060**	**9 774**	**12 089**	**21 863**	**85 203**	**67 350**	**152 553**	**48 868**	**- 32 224**	**16 644**
	(H)	1 789	19 311	21 100	—	3 656	3 656	574	11 972	12 546	1 215	3 683	4 898
Annapolis	(S)	**51 683**	**33 160**	**84 843**	**5 573**	**1 874**	**7 447**	**47 853**	**33 485**	**81 338**	**- 1 743**	**- 2 199**	**- 3 942**
	(H)	790	24 570	25 360	48	950	998	672	19 250	19 922	70	4 370	4 440
Kings	(S)	**39 985**	**15 387**	**55 372**	**2 110**	**1 760**	**3 870**	**6 369**	**9 597**	**15 966**	**31 506**	**4 030**	**35 536**
	(H)	1 714	26 635	28 349	134	2 893	3 027	1 064	15 878	16 942	516	7 864	8 380
Queens	(S)	**56 380**	**21 861**	**78 241**	**7 236**	**2 272**	**9 508**	**52 267**	**17 275**	**69 542**	**- 3 123**	**2 314**	**- 809**
	(H)	2 340	31 147	33 487	87	2 918	3 005	144	2 510	2 654	2 109	25 719	27 828
Lunenburg	(S)	**58 676**	**1 341**	**60 017**	**498**	**660**	**1 158**	**5 429**	**6 169**	**11 598**	**52 749**	**- 5 488**	**47 261**
	(H)	3 168	14 284	17 452	14	880	894	635	6 507	7 142	2 519	6 897	9 416
Digby	(S)	**61 340**	**18 805**	**80 145**	**1 290**	**851**	**2 141**	**30 799**	**26 469**	**57 268**	**29 251**	**- 8 515**	**20 736**
	(H)	2 514	—	2 514	826	—	826	—	147	147	1 688	- 147	1 541
Yarmouth	(S)	**11 773**	**4 568**	**16 341**	**82**	**1 422**	**1 504**	**2 437**	**4 818**	**7 255**	**9 254**	**- 1 672**	**7 582**
	(H)	642	—	642	21	—	21	475	—	475	146	—	146
Shelburne	(S)	**28 457**	**2 882**	**31 339**	**7 934**	**—**	**7 934**	**15 908**	**1 098**	**17 006**	**4 615**	**1 784**	**6 399**
	(H)	655	5 091	5 746	12	—	12	341	—	341	302	5 091	5 393
Inverness	(S)	**11 218**	**175 750**	**186 968**	**—**	**59 011**	**59 011**	**—**	**22 595**	**22 595**	**11 218**	**94 144**	**105 362**
	(H)	2 422	1 385	3 827	—	3 612	3 612	—	—	—	2 442	- 2 227	215
Victoria	(S)	**5 023**	**33 152**	**38 175**	**57**	**71 834**	**71 891**	**—**	**221**	**221**	**4 966**	**- 38 903**	**- 33 937**
	(H)	1 136	—	1 136	—	615	615	334	—	334	802	- 615	187
Cape Breton	(S)	**13 297**	**84 615**	**97 912**	**—**	**23 895**	**23 895**	**—**	**244**	**244**	**13 297**	**60 476**	**73 773**
	(H)	10 573	—	10 573	—	902	902	—	—	—	10 573	- 902	9 671
Richmond	(S)	**2 346**	**79 064**	**84 410**	**—**	**3 043**	**3 043**	**—**	**584**	**584**	**2 346**	**75 437**	**77 783**
	(H)	—	—	—	—	—	—	—	—	—	—	—	—
TOTAL	(S)	**860 128**	**1 090 234**	**1 950 362**	**56 307**	**251 563**	**307 870**	**431 199**	**408 377**	**839 576**	**372 622**	**430 294**	**802 916**
	(H)	51 835	190 119	241 954	1 207	40 617	41 824	23 614	117 279	140 893	27 014	32 223	59 237
GRAND TOTAL		**911 963 (182,987 Mfbm)**	**1 280 353 579,680 cords)**	**2 192 316**	**57 514 (11,540 Mfbm)**	**292 180 (132,284 cords**	**349 694**	**454 813 (91,259 mfbm)**	**525 656 (237,991 cords)**	**980 469**	**399 636 (80,188 mfbm)**	**462 517 (209,404 cords**	**862 153**

Figures may not balance exactly due to rounding.
Fuelwood and non-commercial disposals not included.
Minus quantities indicate wood cut but not yet processed, or wrong county of origin reported, or processed at other than standard rate of recovery.

Total shipments of Nova Scotia forest products are now valued at more than $500 million per year and represent some 30% of the value of provincial exports (see International Exports map and text, pages 72-73). Although the pulp and paper and sawmill industries appear to be operating at or near their effective capacity, there is room for growth in other forest-related businesses.

For example, a four to five-fold increase in the production and export of Christmas trees over the next five to ten years is thought by industry representatives to be a realistic forecast.

Fuelwood harvesting is another area of growing activity, with an annual cut now estimated at over 450,00 m^3 (200,000 cords), as increasing numbers of householders look for alternatives to oil as a source of heat. In a related field, it is estimated that as much as 1,800,000 m^3 (800,000 cords) of wood wastes may be accessible for energy use. The current value of such wastes, if utilized in this way, is estimated to be $50 million annually.

A detailed, county-by-county breakdown of forest production statistics is shown in the following Table. Relating this information to the land capability and mill location data presented on the map facing this page can lead to a more complete understanding of the role of the forests in the economy of various regions of rural Nova Scotia.

SUMMARY OF PRODUCERS BY TYPE OF SAWN PRODUCT

	1982	1983
Number of firms producing lumber only	272	295
Number of firms producing boxwood only	5	6
Number of firms producing tiles only	0	0
Number of firms producing mine packs only	1	1
Number of firms producing laths only	29	26
Number of firms producing shingles only	16	19
Number of firms producing staves & headings only	3	4
Sub Total	326	351
Number of firms producing more than 1 product	50	60
Total Number of Firms	376	411

Biophysical Land Classification

Cartographers have many techniques for presenting information on maps. Colours, textures, and symbols play important roles in expanding on the basic facts contained in outlines and words. Supplementary graphs and tables may also be used to illustrate or explain specific points.

As the information needs of land use managers have become increasingly complex and exacting, it has been necessary to devise sophisticated codes with which to condense more and more data into available space. In recent years, the Nova Scotia Department of Lands and Forests has chosen to employ one such new code for their Biophysical Land Classification System.

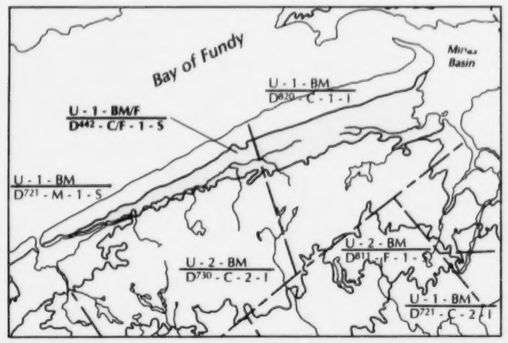
As the name suggests, this system provides a means for classifying land according to those physical characteristics of an environment which influence its biological capacity. The biophysical land classification system for Nova Scotia divides the province into units which are ecologically similar. Because the classification is based on features of terrain, it provides a framework for ecologically sound plans and policies for land use.

The largest unit of classification is called the Land Region, and is subdivided into progressively smaller units called Land Districts and Land Systems. Political subdivisions such as counties may contain a wide variety of biophysical conditions. Land Regions, because of their ecological uniformity, provide a realistic basis for summarizing an amazing wealth of resource data. Such a summary is virtually essential for the development of multiple-use resource plans and policies which are necessarily based on many considerations, including land productivity, social and economic values, and wildlife and recreational needs.

On the map facing this page, the Land Regions of Nova Scotia are shown in outline, each with the appropriate land region code superimposed on it. The key to the map, in the lower right hand corner of the page, is the key to decoding the biophysical information.

Each land region code consists of two rows of letters and numbers. Within it, each letter or number represents a specific piece of information about the region being described, and can be interpreted by referring to the key. According to the Biophysical Land Classification System, for instance, the land region containing the Annapolis Valley (see inset map below) is represented by the code:

$$\frac{\text{U - 1 - BM/F}}{\text{D}^{442}\text{ - C/F-1-S}}$$



The reader who is accustomed to the system will recognize at a glance that this region is potentially well suited to agriculture. The initial letter U indicates that the region is relatively level, with slopes not exceeding 30%. The number 1 in the second position stands for a lowland relief class in which the maximum elevation is 500'. The designation BM/F tells that the landform is a basal moraine, and hence glacial in origin, but that it is overlain in part by fluvium deposits, or sedimentary silts from rivers.

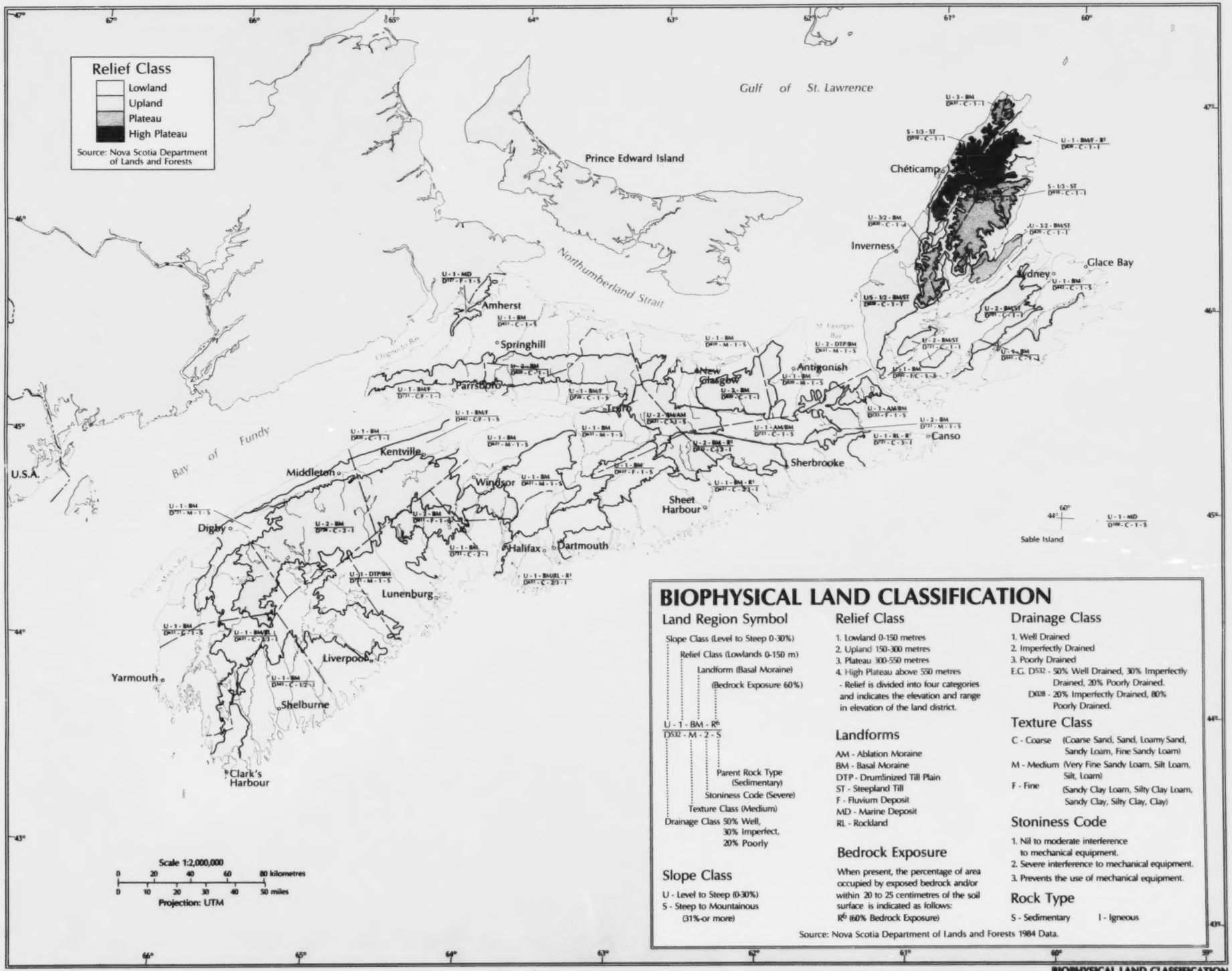
From D^{442} the reader deduces that 40% of the land here is well drained, 40% has some drainage problems, and 20% is poorly drained — not unlikely conditions to find in a lowland river valley, but ones which might necessitate drainage improvement in order to produce successful agricultural crops. The soil is coarse to fine in texture (C/F), and poses few if any tillage problems because of a minimum stoniness rating of Class 1. There is no bedrock exposure, but the bedrock beneath the overlying landform is of sedimentary (S) origin. In brief, a short code has conveyed more information to the knowledgeable reader than can be presented in written form using hundreds of words.

The practical applications of this system are almost endless when it comes to planning land use activities. Referring to the map on this page, for example, a forester planning a tree planting project would note that the land region which includes the South Mountain range, has a stoniness code of 2, indicating that severe interference to mechanical equipment should be expected. This could seriously restrict the use of machinery in preparing soil for planting, adding significantly to the costs of the project.

Of course, for detailed project planning one would probably wish to work with maps which show the Land District or Land System level of classification — i.e. subdivisions of the larger Land Regions. Because they are drawn to a larger scale, these maps can give greater detail about any specific parcel of land. A topographic pattern category is added to indicate whether land is smooth, ridged, hummocky, etc. Two slope classes are replaced by five ; four relief classes by seven; seven landform choices by twenty-three. District and System maps are available from the Department of Lands and Forests in Halifax.

Throughout this atlas, many of the maps deal with subjects which are directly related to biophysical base data. This is especially true for the forestry and agriculture sections, although use of the land classification system can enhance the interpretation of some of the geological and infrastructure maps as well.

By correlating the biophysical land region codes shown on the map with the specialized resource information which is portrayed on other pages it is possible to arrive at a more complete understanding of the complex social, economic, and ecological forces which shape the province.



BIOPHYSICAL LAND CLASSIFICATION

Land Region Symbol

Slope Class (Level to Steep 0-30%)
Relief Class (Lowlands 0-150 m)
Landform (Basal Moraine)
(Bedrock Exposure 60%)

$$\frac{U - 1 - BM - R^6}{D532 - M - 2 - S}$$

Parent Rock Type (Sedimentary)
Stoniness Code (Severe)
Texture Class (Medium)
Drainage Class 50% Well, 30% Imperfect, 20% Poorly

Slope Class

U - Level to Steep (0-30%)
S - Steep to Mountainous (31%-or more)

Relief Class

1. Lowland 0-150 metres
2. Upland 150-300 metres
3. Plateau 300-550 metres
4. High Plateau above 550 metres

- Relief is divided into four categories and indicates the elevation and range in elevation of the land district.

Landforms

AM - Ablation Moraine
BM - Basal Moraine
DTP - Drumlinized Till Plain
ST - Steepland Till
F - Fluvium Deposit
MD - Marine Deposit
RL - Rockland

Bedrock Exposure

When present, the percentage of area occupied by exposed bedrock and/or within 20 to 25 centimetres of the soil surface is indicated as follows:
R^6 (60% Bedrock Exposure)

Drainage Class

1. Well Drained
2. Imperfectly Drained
3. Poorly Drained

E.G. D532 - 50% Well Drained, 30% Imperfectly Drained, 20% Poorly Drained.
D028 - 20% Imperfectly Drained, 80% Poorly Drained.

Texture Class

C - Coarse (Coarse Sand, Sand, Loamy Sand, Sandy Loam, Fine Sandy Loam)
M - Medium (Very Fine Sandy Loam, Silt Loam, Silt, Loam)
F - Fine (Sandy Clay Loam, Silty Clay Loam, Sandy Clay, Silty Clay, Clay)

Stoniness Code

1. Nil to moderate interference to mechanical equipment.
2. Severe interference to mechanical equipment.
3. Prevents the use of mechanical equipment.

Rock Type

S - Sedimentary I - Igneous

Source: Nova Scotia Department of Lands and Forests 1984 Data.

Ownership of Forest Lands

An unusual feature of Nova Scotia's forest resource is the high ratio of private to Crown ownership. The province's forest land is distributed among four ownership categories:

Crown - ownership vested in the province
Large Private - holdings over 400 ha (1,000 ac.) in size
Small Private - holdings of 400 ha (1,000 ac.) or less
Federal - ownership vested in Canada

As can be seen from the Ownership and Cover Type graph, over two thirds of the forest land in the province is privately owned, with fully 52% in holdings of 400 ha (1,000 ac.) or less. The large landowners account for another 21%, while the province owns 24%. Slightly less than 3% is vested in the Federal Crown, primarily in the two National Parks, Kejimkujik and Cape Breton Highlands.

The total forested area of some 2,000,000 ha (5,000,000 acres) is divided into about 50,000 parcels owned by 30,000 individuals, partnerships, or corporations. Nowhere in Canada, except perhaps in P.E.I., does the private sector own such a high percentage (73%) of the forest. In New Brunswick the Crown/private ratio is about 45/55 and in other provinces it runs as high as 95/5.

The graph also indicates that the three ownership categories account for very similar percentages of each forest cover type. A more detailed analysis of the distribution of forest age classes, species groups, and wood products among the three main ownership categories would show that this pattern remains remarkably consistent. Thus, despite the fact that the land use decisions of individual owners may be difficult to predict, there is sufficient consistency overall to permit reasonably accurate projections of productivity for the purposes of effective forest management, and economic planning in the forestry sector.

1975-1982 VOLUME DATA BY OWNERSHIP AND SPECIES GROUP (m3/ha)

Species	Crown	Large Private	Small Private	Federal	Total
Spruce (R&B)	16.9	32.3	26.5	9.6	24.6
Fir	17.1	12.1	16.0	23.6	15.7
Pine	4.0	5.1	1.9	7.7	3.3
Other Softwood	1.7	2.9	3.7	3.2	3.0
TOTAL SOFTWOOD	**39.7**	**52.4**	**48.1**	**44.2**	**46.6**
Maple	11.8	15.4	12.9	13.7	13.1
Birch	6.0	5.8	5.0	8.1	5.6
Other Hardwood	2.3	3.1	6.6	4.9	4.6
TOTAL HARDWOOD	**20.1**	**24.2**	**24.5**	**26.7**	**23.3**
TOTAL	**59.8**	**76.7**	**72.7**	**70.9**	**69.9**

Source: Information Report N.S. Forest Inventory Provincial Summary 1975 - 1982

1975-1982 VOLUME DATA BY OWNERSHIP AND SPECIES GROUP (000's m3)

Species	Crown	Large Private	Small Private	Federal	Total
Spruce (r&b)	19 711	28 680	52 539	1 114	102 053
Fir	20 001	10 768	31 845	2 741	65 360
Pines	4 630	4 498	3 762	893	13 799
Other Softwood	2 010	2 541	7 375	375	12 308
TOTAL SOFTWOOD	**46 367**	**46 509**	**95 532**	**5 130**	**193 550**
Maples	13 867	13 628	25 534	1 591	54 602
Birches	7 020	5 104	10 035	944	23 126
Other Hardwood	2 678	2 737	13 099	566	19 143
TOTAL HARDWOOD	**23 525**	**21 469**	**48 668**	**3 101**	**96 871**
TOTAL	**69 892**	**67 978**	**144 200**	**8 231**	**290 421**

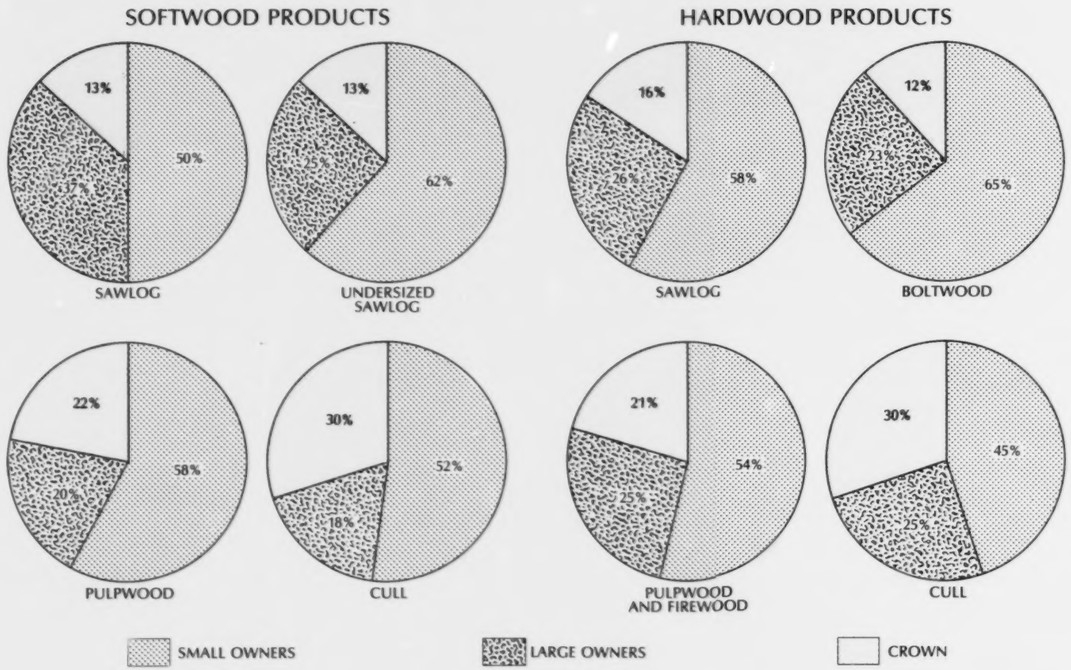
Source: Information Report N.S. Forest Inventory Provincial Summary 1975 - 1982

1975-1982 AREA DATA BY OWNERSHIP AND AGE CLASS IN HECTARES

Age Class	Crown	Large Private	Small Private	Federal	Total
Up to 20 years	80 160	68 680	108 920	470	258 970
21 - 40 years	117 960	96 790	312 450	11 350	539 190
41 - 60 years	399 020	280 110	754 220	15 720	1 449 380
61 - 80 years	333 810	262 910	530 330	45 540	1 173 180
81 - 100 years	135 530	69 500	114 200	23 570	343 370
101 + years	27 940	16 230	19 970	12 800	77 490
Uneven aged	72 220	91 020	141 900	6 090	311 880
TOTAL	1 168 180	886 720	1 983 760	115 960	4 155 410

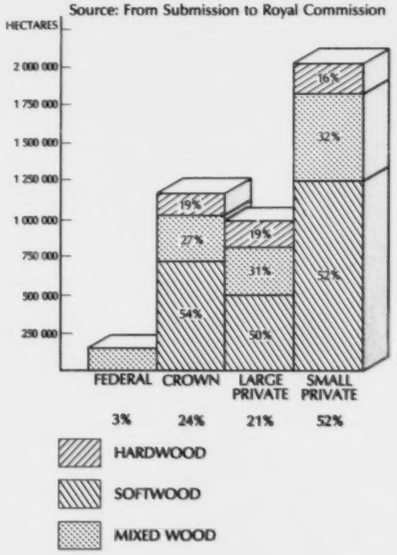
Source: Information Report N.S. Forest Inventory Provincial Summary 1975 - 1982

SOFTWOOD AND HARDWOOD PRODUCTS BY OWNERSHIP

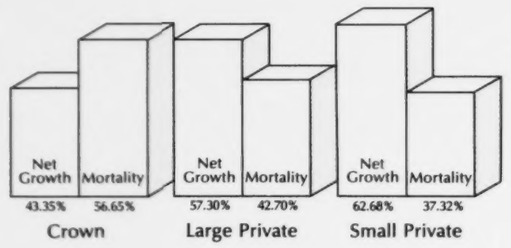


OWNERSHIP AND COVER TYPE

Source: From Submission to Royal Commission



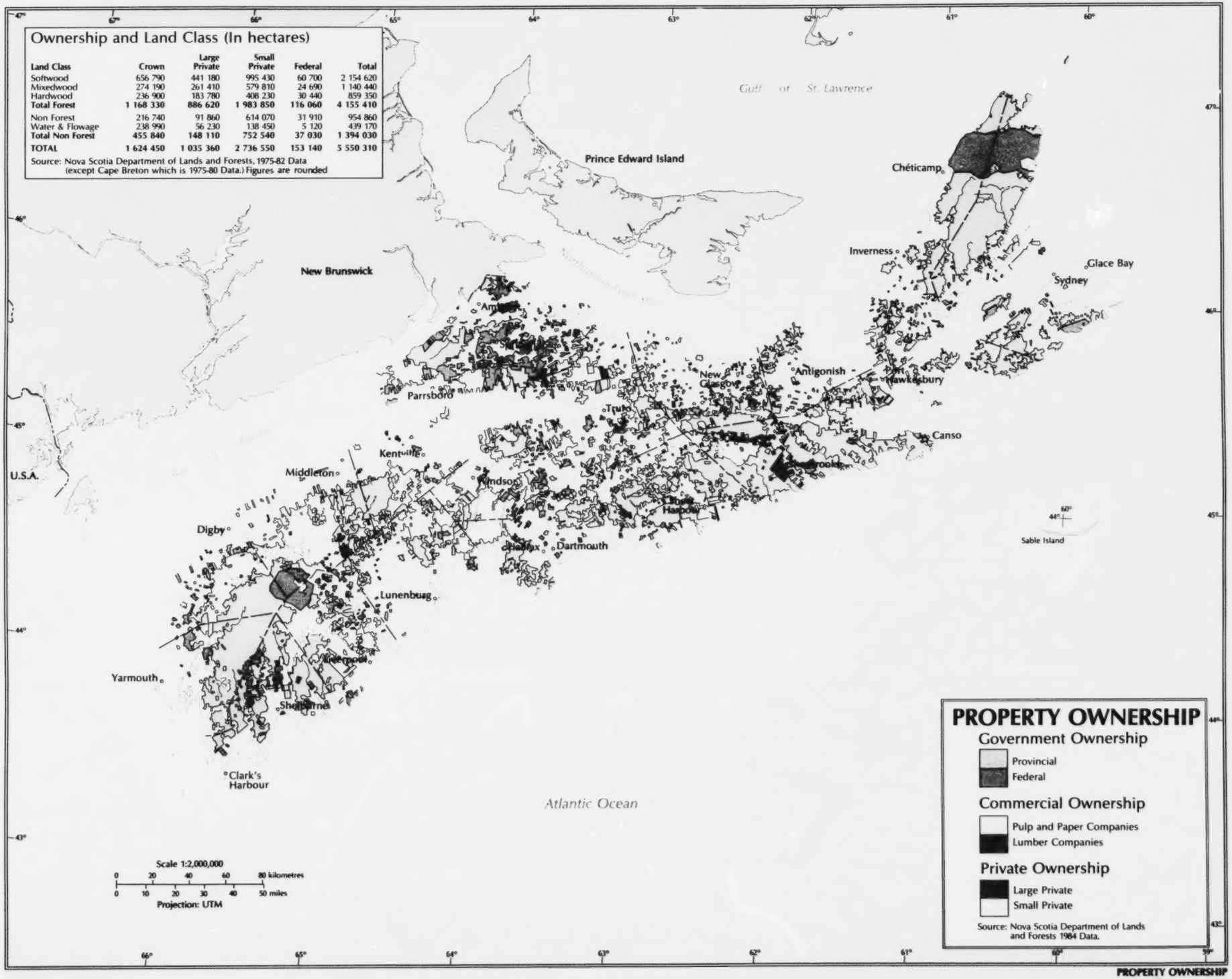
NET GROWTH AND MORTALITY BY OWNERSHIP



Ownership and Land Class (In hectares)

Land Class	Crown	Large Private	Small Private	Federal	Total
Softwood	656 790	441 180	995 430	60 700	2 154 620
Mixedwood	274 190	261 410	579 810	24 690	1 140 440
Hardwood	236 900	183 780	408 230	30 440	859 350
Total Forest	**1 168 330**	**886 620**	**1 983 850**	**116 060**	**4 155 410**
Non Forest	216 740	91 860	614 070	31 910	954 860
Water & Flowage	238 990	56 230	138 450	5 120	439 170
Total Non Forest	**455 840**	**148 110**	**752 540**	**37 030**	**1 394 030**
TOTAL	**1 624 450**	**1 035 360**	**2 736 550**	**153 140**	**5 550 310**

Source: Nova Scotia Department of Lands and Forests, 1975-82 Data (except Cape Breton which is 1975-80 Data.) Figures are rounded



PROPERTY OWNERSHIP

Wildlife Resources

To survive, wild creatures must have food, shelter, and the opportunity to reproduce. The land or water where any species finds these life requirements is called its habitat. Each of the more than 250 bird and mammal species common to Nova Scotia has particular habitat requirements. The abundance of each species, therefore, is determined by the availability of habitats which supply these needs.

Many species may occupy the same general areas and be considered part of the animal community within a broad habitat type. Deer, rabbits, ruffed grouse and pheasant, for example, are regarded as upland species, living on dry land. Other species such as beaver and waterfowl spend most of their life in or near water, and are considered as wetland wildlife. Freshwater fish are a totally water-dependent group with critical links to land habitat. Within such broad animal communities there may occur certain species which have specific habitat requirements. The adjacent map indicates the ability of the various areas of Nova Scotia to support particular wildlife communities.

Upland habitat, for example, is widespread in Nova Scotia, providing adequate support for deer over most of the province's woodland areas. In contrast, another upland game species, the pheasant, is found only in areas of intense agricultural use (see Agriculture Capability pp. 20-21) where hedgerows provide shelter and nesting cover, and wasted grain constitutes a principal source of food.

Coastal intertidal zones provide critically important nesting and feeding habitats to hundreds of thousands of resident and migrating waterfowl and shorebirds. Many shorebird species travel annually from the high arctic to South America. Feeding stops at locations like the tidal mud flats of the Bay of Fundy allow them to accumulate fat reserves which will provide the energy necessary to complete the journey.

The intertidal zones along the southern and eastern shores of Nova Scotia usually remain ice-free for at least part of the winter. Because of this, thousands of Canada geese and black ducks overwinter in the province rather than continue further south.

Freshwater wetlands provide habitat conditions which are essential for more than 50 wildlife species. In addition, wetlands are economically valuable because they serve as flood and erosion control mechanisms, protect subsurface water resources, serve as natural pollution treatment sites, and provide opportunities for recreation, education, and scientific research.

Coastal marine islands, because of the lack of terrestrial predators and the isolation they offer, provide breeding habitat for many colonial birds, especially those species which are ground nesters. The survival in Nova Scotia of relatively rare species such as the puffin and kittiwake depends on the continued availability of suitable nesting islands. Certain islands, especially off the eastern shore and a few near Yarmouth are extremely important nesting sites for common eider. These locations remain reasonably undisturbed by human activity, and are close to rocky shorelines where this sea duck can feed on mussels and other marine life.

Other special habitats include fertile, fresh or brackish tidal marshes which are Nova Scotia's most productive breeding areas for pond ducks such as black ducks and blue-winged and green-winged teal. A few sand beaches in the province provide suitable nesting habit for piping plover, recently listed in Canada as an endangered species in its central range, and as a threatened species in Nova Scotia. The bald eagle, vulnerable to chemicals in the food chain and too often the victim of illegal shooting, is another important resident in Nova Scotia. Areas containing eagle nest trees and preferred wintering sites have been identified as needing protection.

The Importance of Wildlife: A 1981 federal/provincial survey on the value attached to wildlife by Canadians demonstrates just how important natural flora and fauna really are to Nova Scotians. In 1981 about $185 million was spent on wildlife related activities in the province. Hunting and fishing accounted for just over half of this total, while trips to observe wildlife accounted for about one third.

According to the survey results, nearly 96% of Nova Scotians participated in some wildlife activity — hunting, fishing, trapping, watching birds, photographing wildlife, reading outdoor and nature books and magazines, or viewing films and television programmes on wildlife themes. Over 80% of the population of the province held the opinion that maintaining abundant wildlife and protecting endangered species were moderately to highly important priorities. Over half the households in Nova Scotia reported feeding wild birds during the winter as a family activity.

The following table illustrates the number of participants and the amount of expenditures in various popular wildlife-related activities.

Activity	Participants	Expenditures
Big game hunting	77,979	$45,287,084
Small mammal hunting	65,584	14,789,192
Upland bird hunting	37,627	8,784,399
Waterfowl hunting	22,875	10,184,178
Sport fishing	185,040	20,004,270*
Travel to observe wildlife	127,250	60,056,910
Wildlife activities at home or cottage	444,763	5,137,012
Maintaining natural surroundings	34,905	16,268,173
Membership in wildlife/nature organizations	23,207	4,456,992
Total	1,019,230	$184,970,210

*Does not include sport fishing expenditures by individuals over 64 or under 18 years of age.

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Resource Atlas
November 5, 1985

Average Number of License Sales (1979-84)

	Big Game	Small Game	Migratory Birds	Trappers	Salmon	General Fish
Annapolis Co.	2,526	808	219	265	105	2,467
Antigonish Co.	2,211	769	206	213	130	2,472
Cape Breton Co.	8,018	3,822	1,042	172	986	10,995
Colchester Co.	5,793	1,673	567	340	586	5,730
Cumberland Co.	5,963	1,731	762	511	297	4,501
Digby Co.	3,466	1,193	188	202	25	1,658
Guysborough Co.	2,392	921	701	274	445	2,123
Halifax Co.	18,716	7,546	3,450	527	1,949	20,673
Hants Co.	4,329	1,313	441	305	254	4,264
Inverness Co.	2,573	1,173	215	195	600	3,272
Kings Co.	4,447	1,844	657	306	156	4,981
Lunenburg Co.	5,637	1,805	672	318	819	5,021
Pictou Co.	5,891	1,838	518	435	337	7,101
Queens Co.	2,465	916	339	217	440	1,748
Richmond Co.	1,470	786	535	120	128	933
Shelburne Co.	3,380	1,743	1,897	208	29	1,233
Victoria Co.	898	431	146	103	140	844
Yarmouth Co.	4,444	1,798	1,381	293	150	2,279
Nova Scotia	84,619	32,110	13,936	5,004	7,576	82,295

Average Wildlife Harvest (1979-84)

	Big Game	Small Game	Migratory Birds	Furbearers	Salmon	Other Fish
Annapolis Co.	2,002	22,541	835	3,243	1	191,529
Antigonish Co.	1,062	27,301	3,620	3,368	24	46,451
Cape Breton Co.	1,284	49,902	5,066	3,560	1,546	114,274
Colchester Co.	4,034	37,490	6,684	5,739	363	55,184
Cumberland Co.	3,956	40,376	9,247	15,936	67	155,184
Digby Co.	1,721	34,163	1,717	2,374	36	150,808
Guysborough Co.	3,509	36,166	12,270	2,640	1,391	117,228
Halifax Co.	3,371	66,424	20,589	3,877	630	199,774
Hants Co.	3,125	30,546	3,910	3,529	156	383,643
Inverness Co.	1,776	26,219	2,117	15,806	585	97,181
Kings Co.	1,327	36,463	4,982	5,442	24	136,229
Lunenburg Co.	3,408	24,845	5,182	2,742	1,713	150,687
Pictou Co.	2,584	32,607	3,555	4,784	56	102,182
Queens Co.	1,974	15,294	4,071	1,027	447	271,120
Richmond Co.	1,097	17,155	6,212	1,270	477	41,911
Shelburne Co.	1,638	18,111	24,095	1,698	0	49,312
Victoria Co.	786	17,916	3,619	693	262	55,684
Yarmouth Co.	2,156	25,974	10,845	2,739	91	67,467
Nova Scotia	40,810	3,791,603	128,616	80,467	7,869	2,385,848

Total Wetlands and Wildlife Habitats (In hectares)

	High Salt Marsh	Low Salt Marsh	Freshwater Wetlands	High Value Wetlands	Wildlands
Annapolis Co.	122	103	8,243	773	264,431
Antigonish Co.	61	228	1,254	388	114,494
Cape Breton Co.	96	198	14,707	3,825	213,730
Colchester Co.	723	463	8,606	3,493	296,000
Cumberland Co.	1,387	1,098	11,159	9,464	369,900
Digby Co.	268	380	9,622	800	229,441
Guysborough Co.	77	78	20,714	3,083	377,935
Halifax Co.	173	704	23,688	3,971	485,425
Hants Co.	892	692	10,005	3,995	257,976
Inverness Co.	118	248	8,839	1,830	310,180
Kings Co.	617	832	5,639	1,615	157,230
Lunenburg Co.	111	148	13,764	1,161	245,280
Pictou Co.	41	275	4,779	628	234,008
Queens Co.	144	118	29,951	941	183,398
Richmond Co.	85	176	11,476	1,231	113,760
Shelburne Co.	487	713	23,486	1,501	225,630
Victoria Co.	91	168	6,714	96	216,053
Yarmouth Co.	1,650	1,508	13,011	1,473	184,500
Nova Scotia	7,143	8,130	225,657	40,268	4,479,371

Scale 1:2,000,000
0 20 40 60 80 kilometres
0 10 20 30 40 50 miles
Projection: UTM

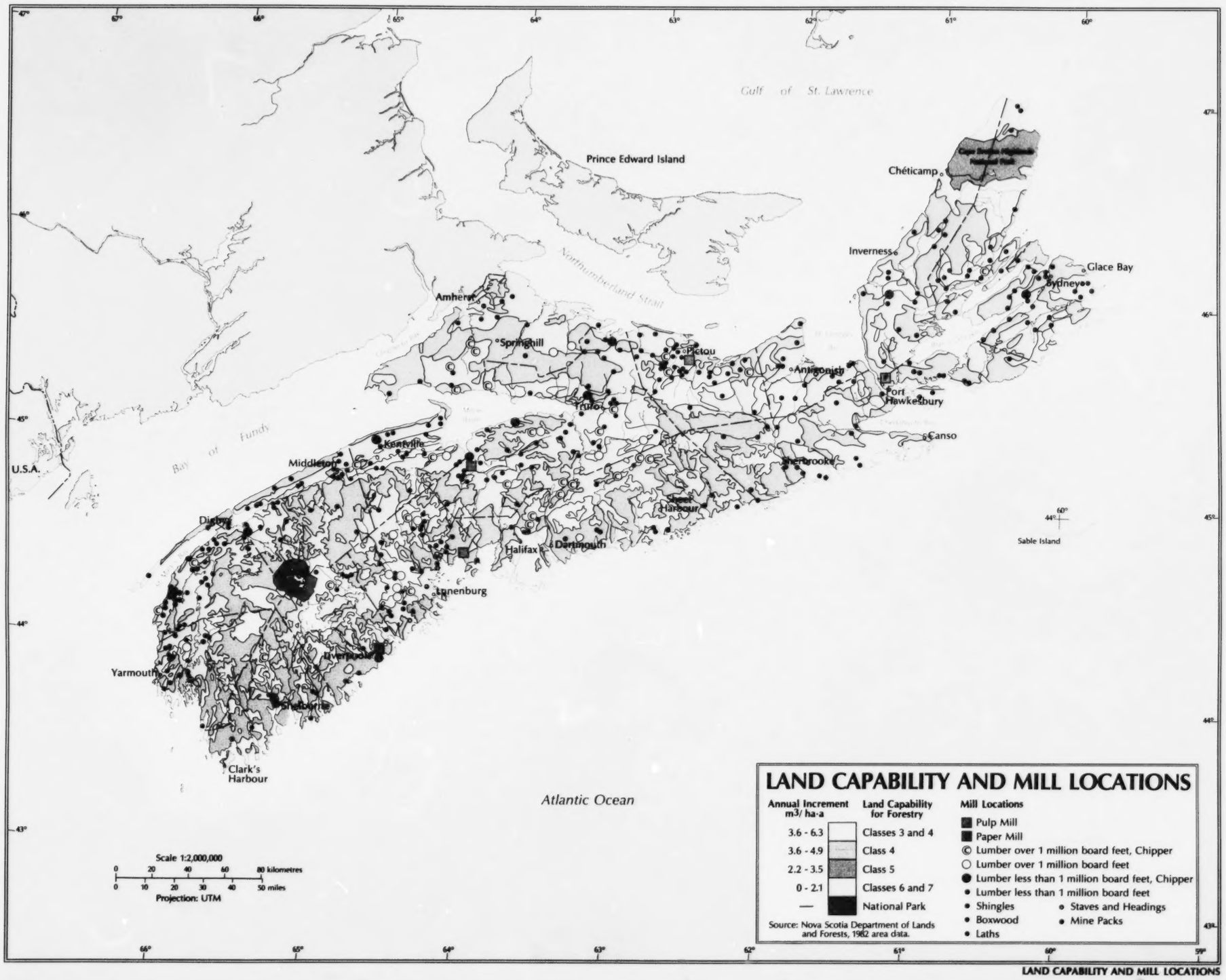
WILDLIFE RESOURCE HABITAT AND HARVEST

Unique Habitats
- Piping Plover Nesting Habitat
- Sensitive Islands
- Critical Islands
- Bald Eagle Habitat

Production Areas for Black Ducks
- 2-4 Broods
- 5+ Broods

- High Potential Wetlands
- Principal Bird Migration Stops
- Principal Waterfowl Wintering Areas
- Pheasant Habitat
- Game Sanctuary
- Upland Wildlife

Source: Nova Scotia Department of Lands and Forests Wildlife Division, 1984 Data



LAND CAPABILITY AND MILL LOCATIONS

Climatic Zones

Ranges of a) annual total degree days above 5°C., and b) May to September total rainfall, have been used to divide Nova Scotia into Climatic Zones. Each zone is characterized by a range of heat units and seasonal precipitation. Generally the preferred areas for agriculture have the highest heat units and moderate rainfall.

May to September Rainfall: The distribution of rainfall is shown on the map for a period roughly corresponding to the growing season. It is important that agricultural crops have sufficient rain, evenly distributed over the growing season, to meet their water requirements.

Seasonal precipitation at Sydney and Yarmouth exceeds crop water requirements, so they are unlikely to suffer crop water deficits. Parts of the Annapolis Valley and the Northumberland Shore, however, depending on soil type, may have crop water deficits in years with below normal rainfall.

Degree Days (Heat Units): Temperature affects plant processes mainly by controlling the rate of growth. The concept of growing degree-days or heat units assumes that plant growth is related directly to the average temperature. There are certain minimum temperatures below which plants do not grow. For perennial plant growth, a threshold temperature of 5°C. is most valid, while for tender, heat-loving plants, such as tomatoes and beans, a base temperature of 10°C. is more appropriate.

To compute the degree days (heat units) for a particular location and date, calculate the average of the maximum and minimum temperature for the day. Then subtract the base temperature from the average temperature.

For example: Max. Temp. = 24°C.
Min. Temp. = 16°C.
Av. Temp. = $\frac{24 + 16}{2}$ = 20°

Degree Days Above 5°C. = 20 - 5 = 15
Degree Days above 10°C. = 20 - 10 = 10

If the daily average temperature is below the base temperature, the degree day value is zero. When using degree days, it is important to know what base temperature, and what temperature scale (Fahrenheit or Celsius) has been used.

Average Annual Total Degree day values are prepared by adding together the degree days for each day of the year, for each of the preceeding thirty years and then calculating the average yearly degree day total.

Corn heat units are a special case which uses daily maximum and minimum temperature values separately to estimate the amount of plant growth on a given day. Corn heat units are widely used for corn hybrid maturity ratings. *Heat Units for Corn Production in the Maritime Provinces* is a publication available at local Agricultural Offices which provides more detailed information on this subject. Degree day (heat unit) information can indicate how much heat is available for crop production in a given area. By selecting crops or varieties with a heat requirement matched to the location, a successful harvest will be more likely.

Average Frost-Free Period: The frost-free period is the number of days between the last occurrence in the spring and the first in the fall, of a temperature of 0°C. or less, measured at 1.2 m above the ground. The distribution of the average frost-free period is presented in the map on the facing page. It is important to remember that this is an *average*. Half the time the actual frost-free period will be shorter than indicated, and half the time it will be longer because of differences in weather from year to year. Also, the range of frost-free days within an area can vary, sometimes by as much as three or four weeks, because of local differences in topography or shelter.

The longest frost-free periods are found in a narrow strip along the southwestern coast of the province, where the moderating effect of the sea is at its greatest. However, the frost-free period decreases rapidly with distance inland. A narrow coastal strip along the Northumberland Strait has a frost-free period of about 130 days, comparable to that of the Annapolis Valley. By contrast, inland areas and the highest elevations have the shortest frost-free periods. The range of variability which is possible at a single location is demonstrated by data from Kentville where the shortest frost-free period recorded was 95 days, the longest was 170 days, and the average was 138 days.

A total of 9% of Nova Scotia's land area is devoted to agriculture. The industry includes over 5,000 farms; nearly 90% are owned by individuals or families.

The principal farming areas of Nova Scotia are the lush Annapolis-Cornwallis Valley and the gentle contours of the Northumberland Shore. Dairy farming is the largest single specialty, while poultry, eggs, pork, beef, fruit, and vegetables are other important products of Nova Scotia agriculture.

Agriculture

Soils and Crops

Climate, vegetation, and parent material (i.e. the original bedrock or glacial debris from which soils form through the process of weathering) have played important roles in the development of the varied soil types found in Nova Scotia. These soils have developed under conditions of high rainfall, a cool, temperate climate, forest vegetation, and parent materials which are, for the most part, acidic. The combination of these factors has resulted in a process of leaching which has removed a large proportion of the basic elements, such as calcium, magnesium, potassium, and sodium from the surface soils. This process is known as podzolization, and soils thus formed are called podzols. Such soils are naturally of low fertility and require the addition of lime and fertilizer for good crop production.

Agricultural Soils of Nova Scotia: The adjacent map illustrates areas in Nova Scotia which have a high potential for crop production. Depicted on this map as well is the distribution of actual agricultural production throughout the province. The overlay of these two different sets of data indicates that there exists a definite relationship between soil potential and actual soil productivity. It is not surprising that the greatest proportion of agricultural production in the province is to be found in those areas where soil factors and climatic factors combine to create the most favourable conditions.

Large portions of the province have soils which are characterized by their shallowness over bedrock. The deeper, agriculturally more productive soils are concentrated in three areas, as indicated in Figure A. These are the North Shore (parallel to the Northumberland Strait), the Minas Basin area, and the Annapolis-Cornwallis Valley.

Though Nova Scotia occupies an area in excess of 5.25 million hectares (13 million acres) only 20% of that area, is suitable for some form of commercial farming. The Agriculture Capability Map facing this page shows two, broad classes of capability — multi-crop and limited-crop areas. Generally the multi-crop soils are better drained, less stony, and can grow a wider variety of forages, grains, fruits and vegetables. The limited-crop soils are primarily suited for growing hay and silage, or for pasture.

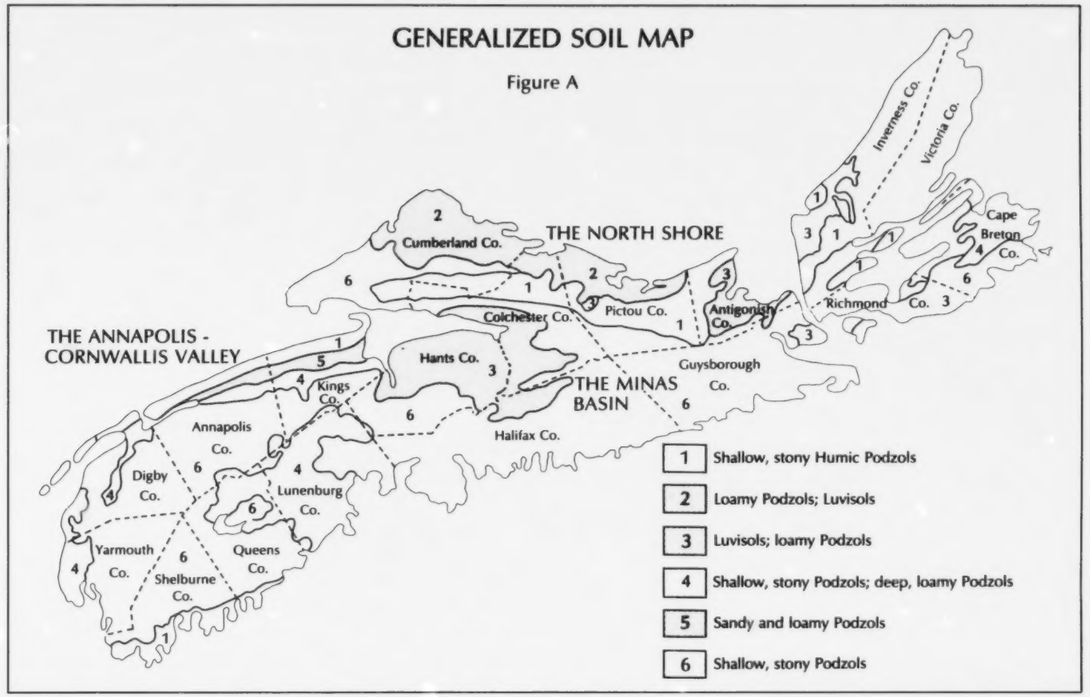
Soils of the Northumberland Shore: Most of the productive soils in this area are confined to the Carboniferous lowland plain of Cumberland, North Colchester, and Pictou Counties. The term Carboniferous indicates that practically all the parent materials have been derived from rocks of Carboniferous age. The parent materials are glacial till, dark, reddish brown in colour, with surface textures ranging from sandy loam to clay loam. There is a wide range in stoniness and relief.

Cleared land in this area is used mainly for the production of forage in support of dairy farming, although some small fruits, vegetables, potatoes and grains are grown.

The Soils of the Minas Basin Area: Moderately coarse-textured soils have developed on the Triassic sandstones bordering the Minas Basin. As in the Northumberland Shore region, cleared areas are largely used for forage to support dairy herds, while grain, small fruits, potatoes and vegetables are also grown.

The Soils of the Annapolis-Cornwallis Valley: Soils occurring in this region have developed on parent materials derived from the red Triassic sandstones and shales that underlie the valley, along with some trap rock from the North Mountain. At the eastern end grey and black shales and slates, and at the western end granites from the southern upland, have had modifying influences on the texture and colour of the parent material.

Soils developed from fine-textured till occur along the lower slopes of the North and South Mountains. These soils vary in texture from shaly clay to clay in the subsoil layer, and from sandy loam to clay loam on the surface. Colours range from yellowish red, through dusky red to greyish brown, with reddish brown being the dominant soil colour in the area.



Extensive portions of the valley floor are occupied by soils developed from glacial or post-glacial sediments. Except for a few thousand hectares of finely textured marshlands, these soils are moderately coarse to coarse. Because of the sandy nature of the parent material some of the coarser soils in the area are fast draining and subject to drought, a factor that has limited their agricultural development.

The Annapolis-Cornwallis Valley is the most intensively farmed area of the province. Tree fruits, small fruits, potatoes, tobacco, vegetables, small grains, and forage crops utilize most of the cleared farmland.

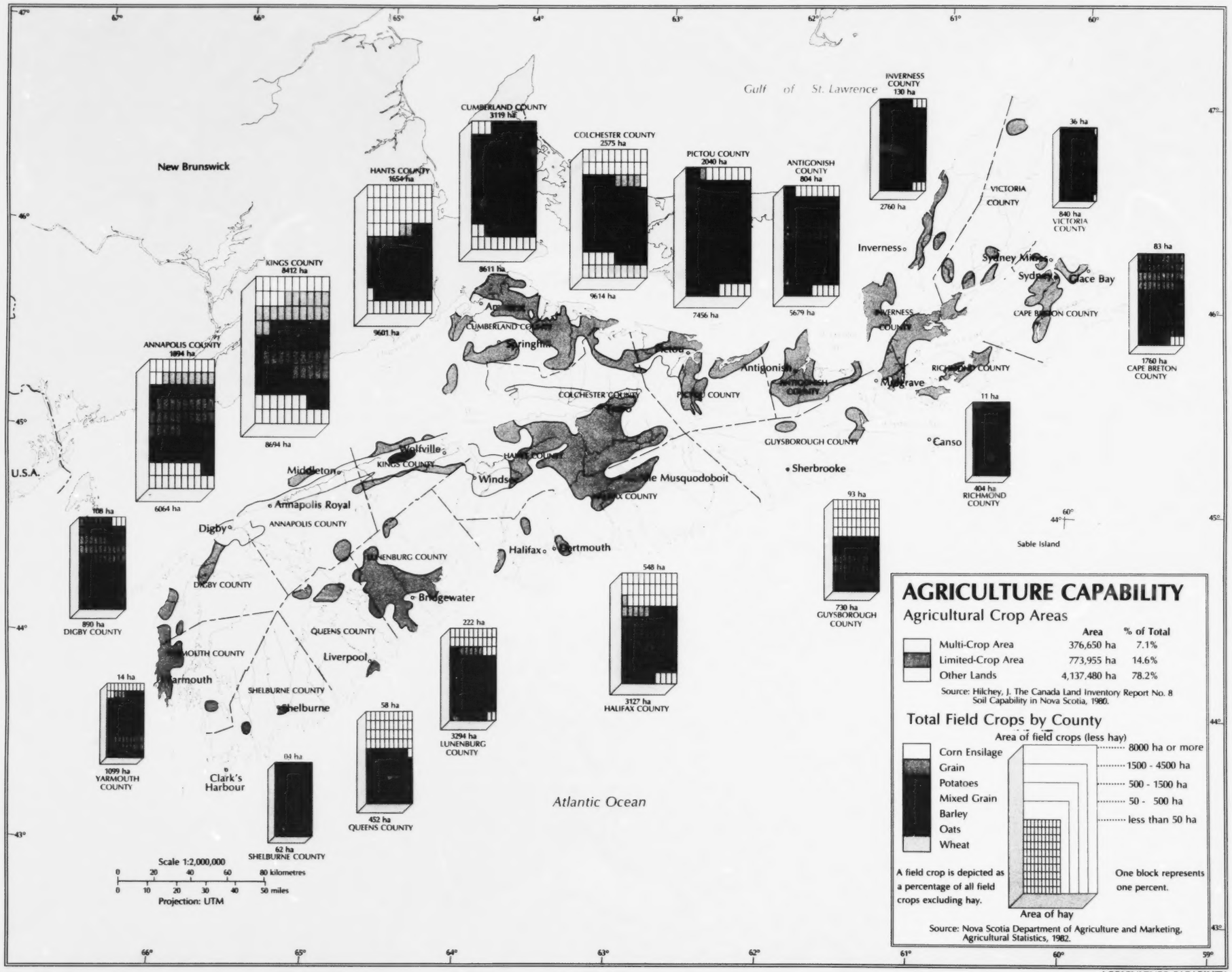
Agricultural Productivity: As noted above, one would expect the highest agricultural production to come from those areas with preferred soils and climatic conditions. The map clearly demonstrates that most of Nova Scotia's agricultural products come from the three preferred areas described, in which are found the counties of Annapolis, Kings, Hants, Cumberland, Colchester, Pictou and Antigonish.

A detailed analysis of recent census data reveals that these seven counties contain.

- 99% of the wheat acreage in Nova Scotia
- 98% of the grain corn acreage
- 95% of the potato acreage
- 95% of the mixed grain acreage
- 94% of the barley acreage
- 92% of the oats acreage
- 91% of the ensilage corn acreage

Of the total provincial potato and grain corn acreages, 86% and 82% respectively are confined to Kings County in the Annapolis-Cornwallis Valley. Commercial tree fruit production occurs exclusively in this region as well.

From the most recent agricultural statistics it can be seen that over 75% of Nova Scotia's field crop acreage is devoted to forage crops in support of the livestock industry — principally dairy farming. The distribution of livestock production closely parallels the pattern of crop production in the province. Of the provincial dairy herd, 86% is found in the seven agricultural counties (plus Halifax County). The same seven counties, plus Digby, account for 94% of Nova Scotia's hog production, and the largest proportion of beef, sheep, egg, and broiler chicken production is also restricted to the Annapolis-Cornwallis Valley, Minas Basin, and North Shore areas.



AGRICULTURE CAPABILITY

Agricultural Crop Areas

	Area	% of Total
Multi-Crop Area	376,650 ha	7.1%
Limited-Crop Area	773,955 ha	14.6%
Other Lands	4,137,480 ha	78.2%

Source: Hilchey, J. The Canada Land Inventory Report No. 8 Soil Capability in Nova Scotia, 1980.

Total Field Crops by County

A field crop is depicted as a percentage of all field crops excluding hay.

One block represents one percent.

Source: Nova Scotia Department of Agriculture and Marketing, Agricultural Statistics, 1982.

The Nova Scotia Climate

Nova Scotia's climate is governed by two main factors. The first is the position of the province, halfway between the equator and the north pole, which produces a temperate climate. The second is the maritime (seacoast) location which results in a high humidity.

However, being on the east coast of the continent in a zone where the prevailing winds are from the west gives Nova Scotia a modified continental climate. A continental climate is characterized by a wide temperature range. The modifying influence of the ocean reduces this range somewhat, giving cooler summers and milder winters than in the interior of the continent.

The Climatic Regions of Nova Scotia: Distance from the coast, and elevation determine the local variations in Nova Scotia's climate. Ocean waters exert a major modifying effect throughout the province, since the relief is nowhere extreme. Only the Cobequid and Cape Breton highlands have elevations over 350 metres. Coastal areas have the longest frost-free period, but the advantage of a long season is offset by the cooler temperatures and fewer heat units available for plant growth.

The inset map on this page identifies eight broad climatic regions in order to provide an overview of the climate of the province.

Region A: The Northumberland Shore has a delayed spring, a warm summer and fall, a cold winter, and the lowest precipitation in the province, being sheltered from southerly and easterly storm winds. Because the Northumberland Strait is a shallow, sheltered body of water, warming quickly in summer and freezing in winter, it produces a less moderating effect than other coastal waters.

Region B: In **Northern Nova Scotia** the highlands receive heavy snowfall and have the coldest winter temperatures, but enjoy quite warm summer temperatures.

Region C: The Cape Breton Highlands receive the highest total precipitation in the province, and have cool temperatures both winter and summer.

Region D: Eastern Nova Scotia is a diverse geographic area with high rainfall and generally cool temperatures influenced by the cool Labrador current.

Region E: Western Nova Scotia, gradually sloping upwards from the Atlantic coast, has high rainfall and warmer temperatures than eastern Nova Scotia.

Region F: The Annapolis Valley is a sheltered lowland with the warmest temperatures and the second lowest precipitation in the province.

Region G: The Bay of Fundy Region is a narrow strip along the coast from New Brunswick to Yarmouth. A strong coastal influence produces a long, cool summer and a mild winter. There is frequent fog and moderate precipitation.

Region H: The Atlantic Coastal Region has a strong coastal influence which produces the coolest summers and warmest winters in the province. This effect extends only a few kilometres inland. The moderating influence is strongest in the extreme southwest. Rainfall amounts are high, and there is frequent, heavy, sea fog.

Region I: Sable Island has a marine climate characterized by a narrow temperature range, little snowfall, and frequent fog. It is unsheltered and exposed to high winds.

Measuring the Weather: There are two basic types of weather stations in Nova Scotia. The first are synoptic stations (12 of them in 1982), staffed by the Atmospheric Environment Service of Environment Canada to gather hourly observations which are used in producing weather forecasts. The second group are some 75 climatological stations where volunteers, or staff of cooperating agencies such as Agriculture Canada, note daily temperature and/or precipitation in order to compile accurate climatic records.

Air temperature at each station is measured by a thermometer situated 1.2 m above the ground, in a louvred shelter called a Stevenson screen which protects it from direct sunlight, precipitation, and heat radiating from the ground. The maximum and minimum temperatures are recorded for each day. Snow is measured at several locations, using a ruler, while rainfall is collected in a calibrated container and recorded.

Climatic Normals: A long period of weather observations is necessary to describe the climatic characteristics of a location accurately. Currently, a 30-year period is used as a base for describing the present Nova Scotia climate. This is long enough to filter out short term fluctuations, but is not overridden by any long term trend in the climate. The term *climatic normal* is used to describe the average data for the latest 30-year period, which is 1951-1980.

Climatic normals provide monthly averages for the many parameters observed. In agriculture, precipitation, temperature, hours of sunshine, degree-days, and frost dates are of particular importance. This information is used as a long-term planning tool, either to select a location for a farm, or to plan a cropping programme.

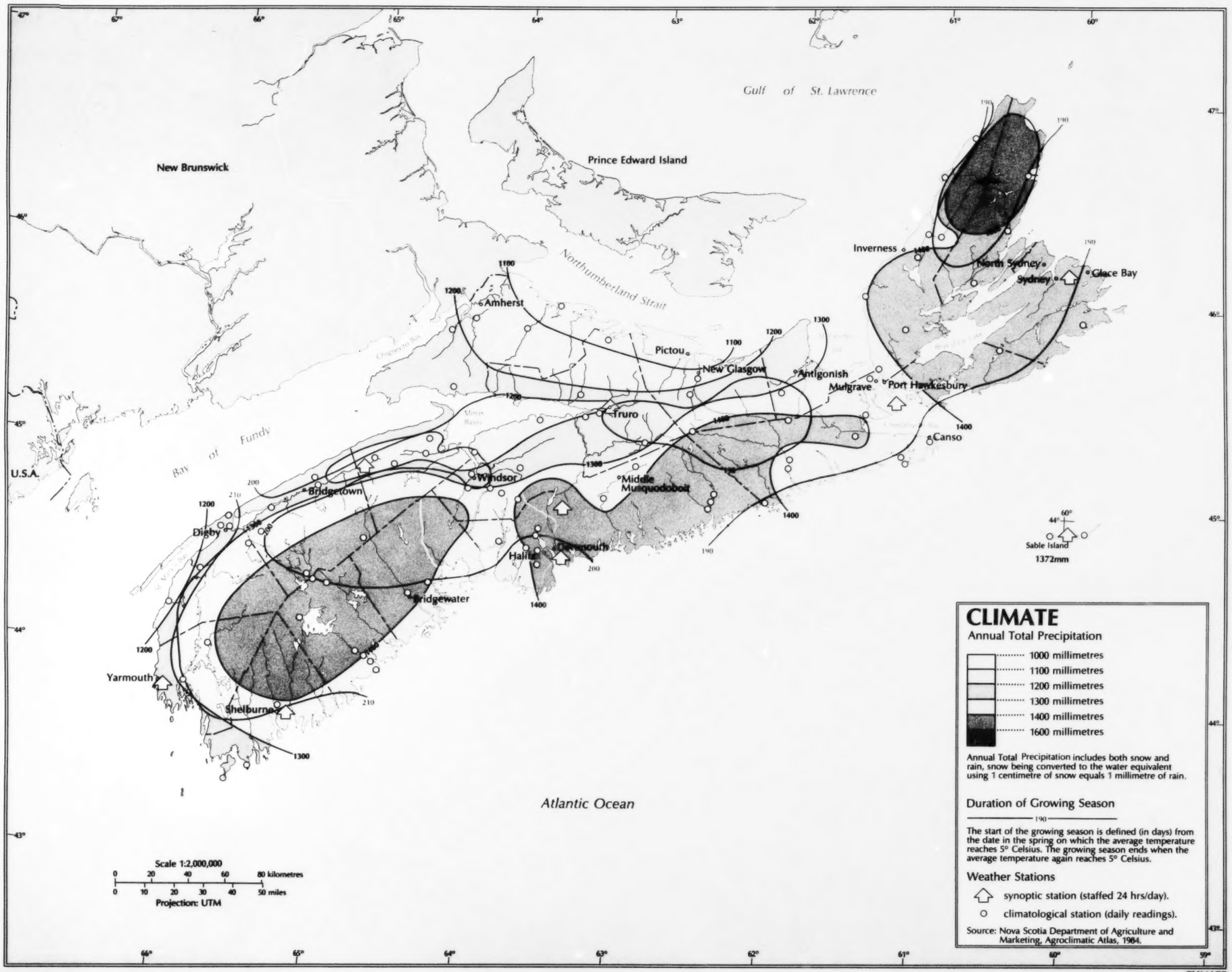
Because it is the extreme events which can be disastrous, averages are sometimes inadequate for planning. For this reason, extremes for the entire period of record — that is, as long as observations have been recorded at a given site — are available. Caution must be used when dealing with extremes. The shorter the period of record, the less likely it is that the observed extremes will actually include an event of low probability, such as a record snowfall, or the latest spring frost ever.

Annual Total Precipitation: The annual total precipitation figures shown in the map on the facing page include both rain and snow. Snowfall has been converted to its water equivalent by using the formula: 1 cm snow = 1 mm water.

Precipitation in Nova Scotia is greatest over most of Cape Breton and along the Atlantic Coast. In these areas, moist air is blown onshore by the easterly and southerly winds which accompany storms passing over the region. When moist air is forced upward as it encounters rising land, it cools, causing the moisture to condense and fall as rain or snow. In lower lying areas, such as Central Nova Scotia, the Annapolis Valley, and the Northumberland Coastal Lowlands, precipitation amounts are lesser. As air descends and warms it is able to hold more water. Therefore, in effect, the topography shelters these regions from the precipitation of storm winds.

Growing Season: Information on the growing season is important for perennial forage production, and provides an indication of how long livestock can be left out on pasture. The start of the growing season is defined as that date in the spring on which the average temperature reaches 5°C. Similarly, the end of the growing season is defined as that date in the fall when the average temperature again reaches 5°C. The value of 5°C. is used because at that average temperature, the daily maximum is about 10°C. and the minimum is about 0°C., a temperature below which most plants are not capable of growth.

CLIMATIC REGIONS
Region A: The Northumberland Shore
Region B: Northern Nova Scotia
Region C: The Cape Breton Highlands
Region D: Eastern Nova Scotia
Region E: Western Nova Scotia
Region F: The Annapolis Valley
Region G: The Bay of Fundy Region
Region H: The Atlantic Coastal Region
Region I: Sable Island



CLIMATE

Annual Total Precipitation

- 1000 millimetres
- 1100 millimetres
- 1200 millimetres
- 1300 millimetres
- 1400 millimetres
- 1600 millimetres

Annual Total Precipitation includes both snow and rain, snow being converted to the water equivalent using 1 centimetre of snow equals 1 millimetre of rain.

Duration of Growing Season

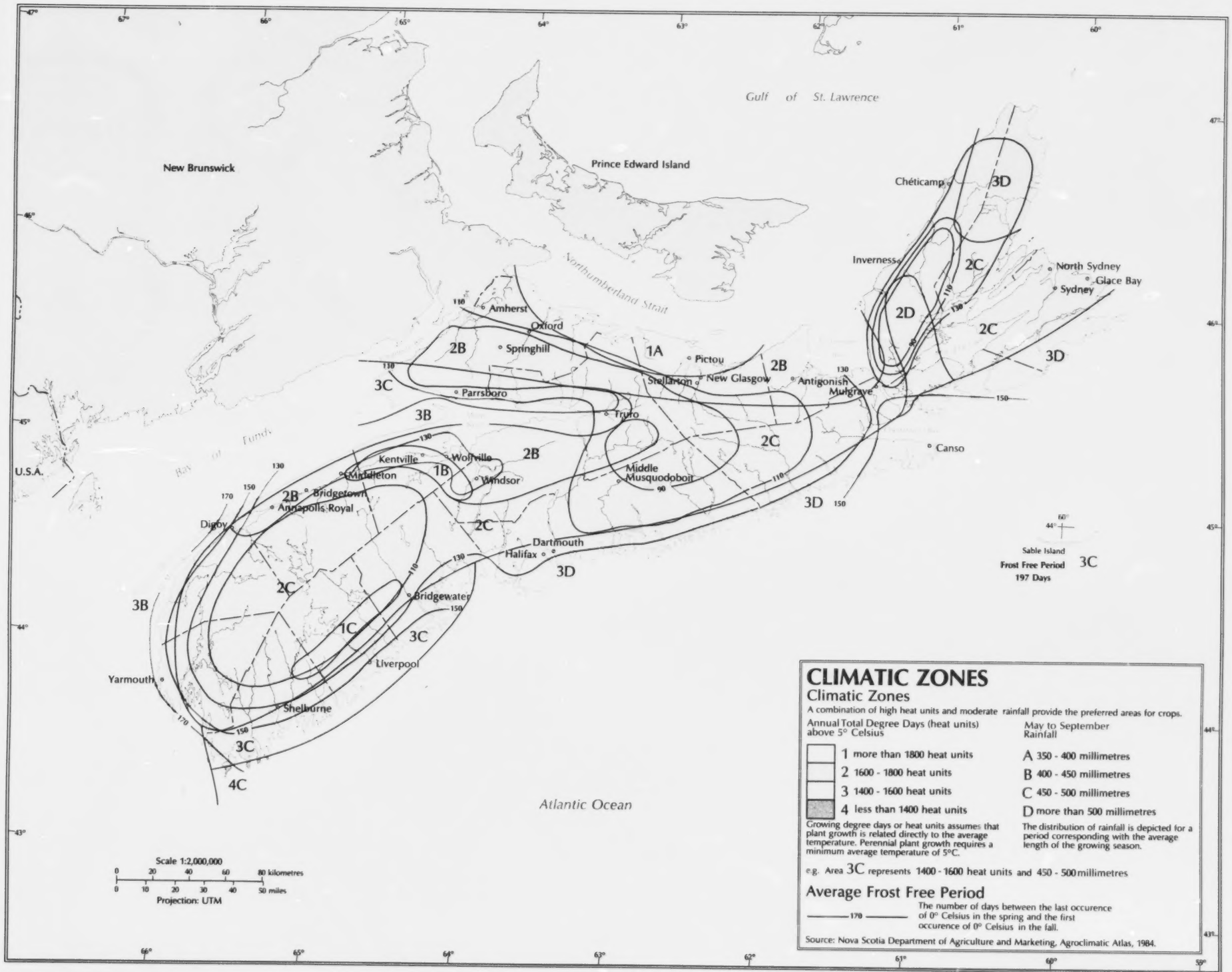
190

The start of the growing season is defined (in days) from the date in the spring on which the average temperature reaches 5° Celsius. The growing season ends when the average temperature again reaches 5° Celsius.

Weather Stations

- synoptic station (staffed 24 hrs/day).
- climatological station (daily readings).

Source: Nova Scotia Department of Agriculture and Marketing, Agroclimatic Atlas, 1984.



CLIMATIC ZONES

Climatic Zones

A combination of high heat units and moderate rainfall provide the preferred areas for crops.

Annual Total Degree Days (heat units) above 5° Celsius	May to September Rainfall
1 more than 1800 heat units	A 350 - 400 millimetres
2 1600 - 1800 heat units	B 400 - 450 millimetres
3 1400 - 1600 heat units	C 450 - 500 millimetres
4 less than 1400 heat units	D more than 500 millimetres

Growing degree days or heat units assumes that plant growth is related directly to the average temperature. Perennial plant growth requires a minimum average temperature of 5°C.

The distribution of rainfall is depicted for a period corresponding with the average length of the growing season.

e.g. Area 3C represents 1400 - 1600 heat units and 450 - 500 millimetres

Average Frost Free Period

170 — The number of days between the last occurence of 0° Celsius in the spring and the first occurence of 0° Celsius in the fall.

Source: Nova Scotia Department of Agriculture and Marketing, Agroclimatic Atlas, 1984.

General Farm Statistics

The Nova Scotia agricultural industry employs approximately 8,000 people and generates farm cash receipts in excess of $240 million annually. Spending by the industry produces a further $139 million in sales of related goods and services. It is important to note, however, that production and spending within the agricultural sector is not uniformly distributed geographically throughout the province.

Although Nova Scotia on the whole has experienced a net increase in actively worked farm land in recent years, there are significant areas of improved farm land which have moved out of production during the same period. A large share of this loss has occurred in isolated areas with difficult soil and climatic conditions.

The Economics of Agglomeration: One result of this transfer of land into and out of production is that both capital investment and agricultural production have tended to become increasingly concentrated in a few, select areas of the province. This trend, which reflects the economic benefits of agglomeration, is expected to continue in the future.

As noted on page 28, it is clear that most investment in the agricultural industry is being focussed on those areas where soil and climatic factors combine to produce favourable conditions for commercial farming operations. Many areas which were cleared in the past for agriculture are clearly unsuited to contemporary commercial farming methods and technologies, because of steep slopes, stoniness, poor drainage etc., and are now reverting to scrub bush or to forestry.

Investment Statistics: The tendency towards agglomeration in the agricultural industry is reflected by a variety of statistics. Nearly 70% of the agricultural holdings in the Province of Nova Scotia are found in the seven agricultural counties which contain the productive areas of the North Shore, Minas Basin, and Annapolis-Cornwallis Valley. These counties are: Annapolis, Kings, Hants, Colchester, Cumberland, Pictou, and Antigonish. Approximately 74% of the total farm acreage in the province can be found in these same counties, and of the total area devoted to cultivated crops, they contain 83%.

The same pattern of investment and productivity is evident in the ownership of specialized farm equipment. Of the total number of grain combines in the province, for example, 91% are found in the major agricultural areas as defined above. Some 82% of all specialized crop harvesters are found in this area — 20% in Kings County alone.

The adjoining map provides details on the capital investment in agricultural operations county by county throughout the province. Total capital investment is broken down into investment in land and buildings; machinery and equipment; livestock and poultry. Fully 77-79% of the investment in all three categories has been made in the seven counties listed above.

Income Statistics: On the opposite side of the ledger from capital investment by the agricultural sector is the income which it generates. The most recent statistics (1981 census) indicate that Nova Scotia's agricultural production generates a total gross annual value of $250 million. Net farm income is estimated at more than $54 million annually.

Livestock production and livestock products (such as milk, cheese, eggs, etc.) accounted for 76% of all farm cash receipts. Cash cropping produced an additional 20% of net farm income, while the remainder was derived from the sale of forest products (principally maple syrup) and some other minor items.

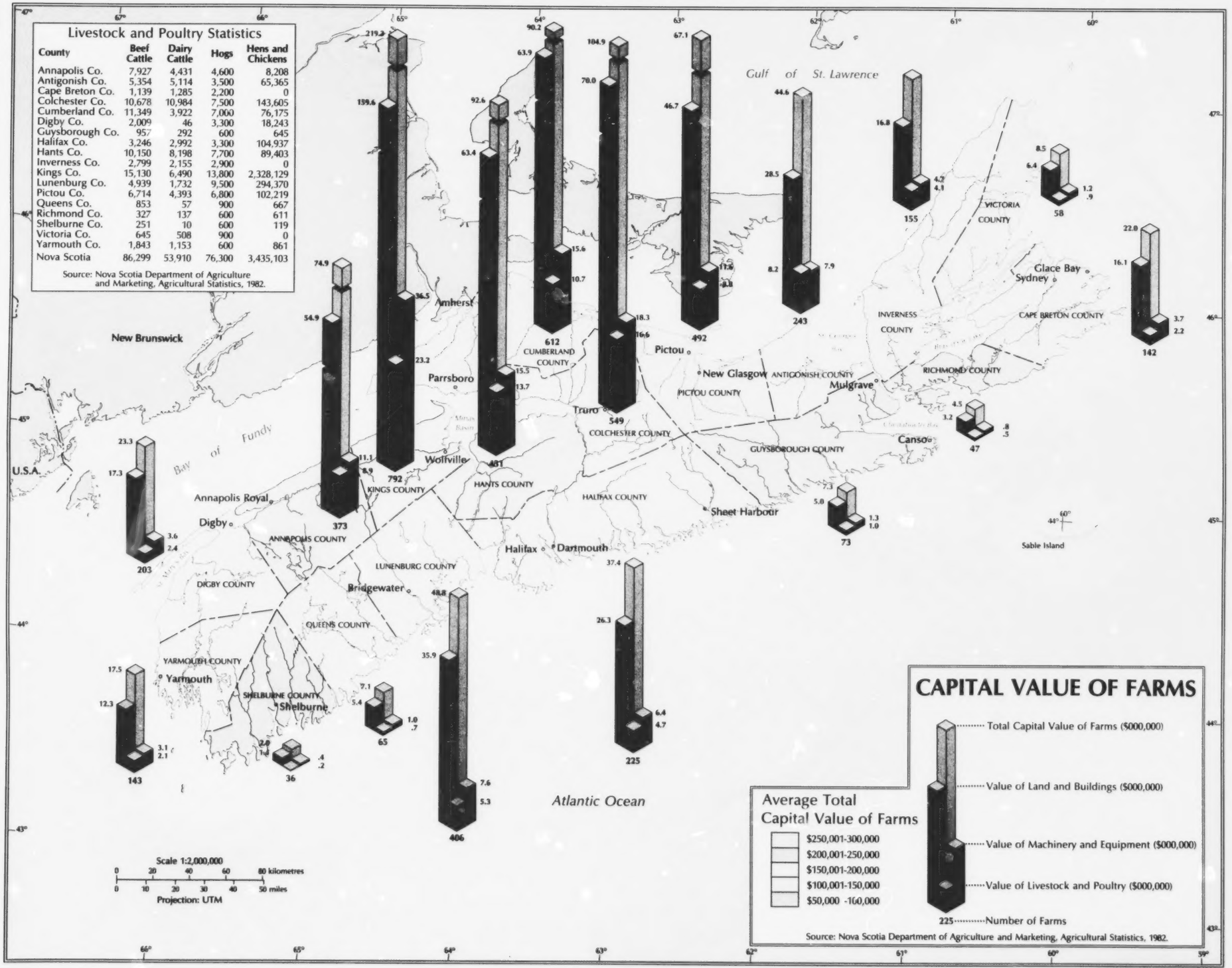
The map also contains a classification of farming operations in the province according to their gross income. Of the more than 5,000 census farms in Nova Scotia, 63% generated gross incomes of less than $10,000 per year; 26% generated annual gross incomes between $10,000 and $100,000; 10% generated yearly gross incomes in excess of $100,000.

Of the more than 500 census farms whose gross incomes exceeded $100,000, 81% were found in the seven primary agricultural counties. Of the 163 census farms with gross incomes over $250,000 per year, 45% were found in Kings County alone. This section of the Annapolis-Cornwallis Valley is undoubtedly the most intensively cultivated area of the province.

Livestock and Poultry Statistics

County	Beef Cattle	Dairy Cattle	Hogs	Hens and Chickens
Annapolis Co.	7,927	4,431	4,600	8,208
Antigonish Co.	5,354	5,114	3,500	65,365
Cape Breton Co.	1,139	1,285	2,200	0
Colchester Co.	10,678	10,984	7,500	143,605
Cumberland Co.	11,349	3,922	7,000	76,175
Digby Co.	2,009	46	3,300	18,243
Guysborough Co.	957	292	600	645
Halifax Co.	3,246	2,992	3,300	104,937
Hants Co.	10,150	8,198	7,700	89,403
Inverness Co.	2,799	2,155	2,900	0
Kings Co.	15,130	6,490	13,800	2,328,129
Lunenburg Co.	4,939	1,732	9,500	294,370
Pictou Co.	6,714	4,393	6,800	102,219
Queens Co.	853	57	900	667
Richmond Co.	327	137	600	611
Shelburne Co.	251	10	600	119
Victoria Co.	645	508	900	0
Yarmouth Co.	1,843	1,153	600	861
Nova Scotia	86,299	53,910	76,300	3,435,103

Source: Nova Scotia Department of Agriculture and Marketing, Agricultural Statistics, 1982.



CAPITAL VALUE OF FARMS

Source: Nova Scotia Department of Agriculture and Marketing, Agricultural Statistics, 1982.

CAPITAL VALUE OF FARMS

Related Industries

The adjacent map depicts the number and location of a wide variety of associated agricultural support industries which play an integral role in the Nova Scotian agricultural community. One of the long term trends in agricultural development and agricultural land use in Nova Scotia, as already noted in the preceeding pages, has been a steady concentration of the industry in the major farming counties. Over the past fifty years, these counties have increased their share of the total land in agricultural production from 60% to 80%.

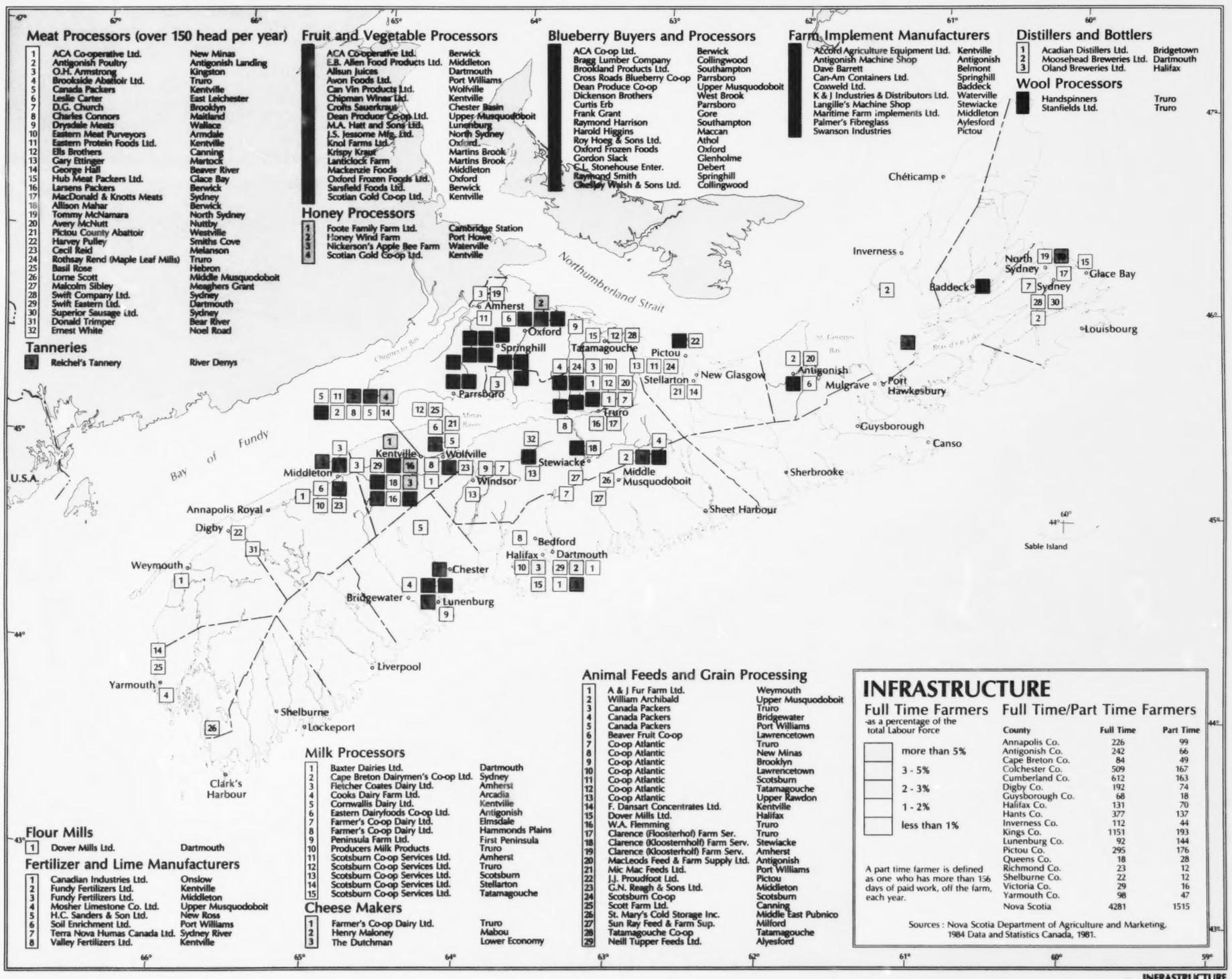
There is a vital interdependent relationship between a primary industry and the businesses which serve it. A healthy farming community, for example, is a prerequisite to establishing and sustaining a dynamic, supporting infrastructure of related businesses and industries, and *vice versa*. An area which is naturally suited to dairy farming will only flourish so long as associated facilities such as creameries and milk processing plants operate in or near the community. By the same token, those facilities can only operate profitably if there is a dependable source of raw product nearby.

Associated industries supporting the agricultural sector of the provincial economy range from abattoirs and canneries to implement manufacturers and tanneries. Frozen food processing, flour milling, animal feed and grain processing, dairy product processing, and many other activities help to bridge the distance between the farm gate and the consumer in Nova Scotia's food system.

In addition to the manufacturing and processing industries which buy products directly from the farm, refine or transform them, and then sell to the public, there are two other types of industries which form part of a healthy agricultural infrastructure. The first of these is that group of secondary industries which depend, wholly or in part, on the agricultural industry but are not directly involved in production or processing of farm products. Included in the list would be such diverse elements as road and rail transportation industries, implement manufacturers and dealers, fertilizer and chemical manufacturers, financial institutions, and a host of others.

The last major group of industries which form an integral part of the agricultural infrastructure can be broadly referred to as the agricultural service industries. Their business is to perform specialized, on-farm services. Among them are aerial spraying outfits, lime spreading companies, soil analysis laboratories, drainage contracting firms, veterinarians, and many others.

When all of the agriculture-related industries in Nova Scotia are taken into account, and the entire agriculture/food industry is considered as a whole, it is the largest industry in the province. Approximately one Nova Scotian in five is employed in some food-related business, and sales are over $1 billion per year.


Meat Processors (over 150 head per year)
1 ACA Co-operative Ltd. New Minas
2 Antigonish Poultry Antigonish Landing
3 O.H. Armstrong Kingston
4 Brookside Abattoir Ltd. Truro
5 Canada Packers Kentville
6 Leslie Carter East Leichester
7 D.G. Church Brooklyn
8 Charles Connors Maitland
9 Dryadale Meats Wallace
10 Eastern Meat Purveyors Armdale
11 Eastern Protein Foods Ltd. Kentville
12 Ells Brothers Canning
13 Gary Ettinger Martock
14 George Hall Beaver River
15 Hub Meat Packers Ltd. Glace Bay
16 Larsens Packers Berwick
17 MacDonald & Knotts Meats Sydney
18 Allison Mahar Berwick
19 Tommy McNamara North Sydney
20 Avery McNutt Nuttby
21 Pictou County Abattoir Westville
22 Harvey Pulley Smiths Cove
23 Cecil Reid Melanson
24 Rothsay Rend (Maple Leaf Mills) Truro
25 Basil Rose Hebron
26 Lorne Scott Middle Musquodoboit
27 Malcolm Sibley Meaghers Grant
28 Swift Company Ltd. Sydney
29 Swift Eastern Ltd. Dartmouth
30 Superior Sausage Ltd. Sydney
31 Donald Trimper Bear River
32 Ernest White Noel Road
Tanneries
Reichel's Tannery River Denys
Fruit and Vegetable Processors
ACA Co-operative Ltd. Berwick
E.B. Allen Food Products Ltd. Middleton
Allsun Juices Dartmouth
Avon Foods Ltd. Port Williams
Can Vin Products Ltd. Wolfville
Chipman Winas Ltd. Kentville
Crofts Sauerkraut Chester Basin
Dean Produce Co-op Ltd. Upper Musquodoboit
M.A. Hatt and Sons Ltd. Lunenburg
J.S. Jessome Mfg. Ltd. North Sydney
Knol Farms Ltd. Oxford
Krispy Kraut Martins Brook
Lanticlock Farm Martins Brook
Mackenzie Foods Middleton
Oxford Frozen Foods Ltd. Oxford
Sarsfield Foods Ltd. Berwick
Scotian Gold Co-op Ltd. Kentville
Honey Processors
1 Foote Family Farm Ltd. Cambridge Station
2 Honey Wind Farm Port Howe
3 Nickerson's Apple Bee Farm Waterville
4 Scotian Gold Co-op Ltd. Kentville
Blueberry Buyers and Processors
ACA Co-op Ltd. Berwick
Bragg Lumber Company Collingwood
Brookland Products Ltd. Southampton
Cross Roads Blueberry Co-op Parrsboro
Dean Produce Co-op Upper Musquodoboit
Dickenson Brothers West Brook
Curtis Erb Parrsboro
Frank Grant Gore
Raymond Harrison Southampton
Harold Higgins Maccan
Roy Hoeg & Sons Ltd. Athol
Oxford Frozen Foods Oxford
Gordon Slack Glenholme
C.L. Stonehouse Enter. Debert
Raymond Smith Springhill
Chesley Walsh & Sons Ltd. Collingwood
Farm Implement Manufacturers
Accord Agriculture Equipment Ltd. Kentville
Antigonish Machine Shop Antigonish
Dave Barrett Belmont
Can-Am Containers Ltd. Springhill
Coxweld Ltd. Baddeck
K & J Industries & Distributors Ltd. Waterville
Langille's Machine Shop Stewiacke
Maritime Farm Implements Ltd. Middleton
Palmer's Fibreglass Aylesford
Swanson Industries Pictou
Distillers and Bottlers
1 Acadian Distillers Ltd. Bridgetown
2 Moosehead Breweries Ltd. Dartmouth
3 Oland Breweries Ltd. Halifax
Wool Processors
Handspinners Truro
Stanfields Ltd. Truro
Northumberland Strait
Bay of Fundy
U.S.A.
Amherst
Oxford
Springhill
Parrsboro
Tatamagouche
Pictou
Stellarton
New Glasgow
Antigonish
Mulgrave
Port Hawkesbury
Guysborough
Canso
Sherbrooke
Sheet Harbour
Truro
Kentville
Wolfville
Middleton
Windsor
Stewiacke
Middle Musquodoboit
Annapolis Royal
Digby
Weymouth
Yarmouth
Clark's Harbour
Shelburne
Lockeport
Liverpool
Bridgewater
Lunenburg
Chester
Bedford
Halifax
Dartmouth
Chéticamp
Inverness
Baddeck
North Sydney
Sydney
Glace Bay
Louisbourg
Sable Island
Animal Feeds and Grain Processing
1 A & J Fur Farm Ltd. Weymouth
2 William Archibald Upper Musquodoboit
3 Canada Packers Truro
4 Canada Packers Bridgewater
5 Canada Packers Port Williams
6 Beaver Fruit Co-op Lawrencetown
7 Co-op Atlantic Truro
8 Co-op Atlantic New Minas
9 Co-op Atlantic Brooklyn
10 Co-op Atlantic Lawrencetown
11 Co-op Atlantic Scotsburn
12 Co-op Atlantic Tatamagouche
13 Co-op Atlantic Upper Rawdon
14 F. Dansart Concentrates Ltd. Kentville
15 Dover Mills Ltd. Halifax
16 W.A. Flemming Truro
17 Clarence (Floosterhof) Farm Ser. Truro
18 Clarence (Kloosternhoff) Farm Serv. Stewiacke
19 Clarence (Kloosterhoff) Farm Serv. Amherst
20 MacLeods Feed & Farm Supply Ltd. Antigonish
21 Mic Mac Feeds Ltd. Port Williams
22 J.J. Proudfoot Ltd. Pictou
23 G.N. Reagh & Sons Ltd. Middleton
24 Scotsburn Co-op Scotsburn
25 Scott Farm Ltd. Canning
26 St. Mary's Cold Storage Inc. Middle East Pubnico
27 Sun Ray Feed & Farm Sup. Milford
28 Tatamagouche Co-op Tatamagouche
29 Neill Tupper Feeds Ltd. Alyesford
Milk Processors
1 Baxter Dairies Ltd. Dartmouth
2 Cape Breton Dairymen's Co-op Ltd. Sydney
3 Fletcher Coates Dairy Ltd. Amherst
4 Cooks Dairy Farm Ltd. Arcadia
5 Cornwallis Dairy Ltd. Kentville
6 Eastern Dairyfoods Co-op Ltd. Antigonish
7 Farmer's Co-op Dairy Ltd. Elmsdale
8 Farmer's Co-op Dairy Ltd. Hammonds Plains
9 Peninsula Farm Ltd. First Peninsula
10 Producers Milk Products Truro
11 Scotsburn Co-op Services Ltd. Amherst
12 Scotsburn Co-op Services Ltd. Truro
13 Scotsburn Co-op Services Ltd. Scotsburn
14 Scotsburn Co-op Services Ltd. Stellarton
15 Scotsburn Co-op Services Ltd. Tatamagouche
Cheese Makers
1 Farmer's Co-op Dairy Ltd. Truro
2 Henry Maloney Mabou
3 The Dutchman Lower Economy
Flour Mills
1 Dover Mills Ltd. Dartmouth
Fertilizer and Lime Manufacturers
1 Canadian Industries Ltd. Onslow
2 Fundy Fertilizers Ltd. Kentville
3 Fundy Fertilizers Ltd. Middleton
4 Mosher Limestone Co. Ltd. Upper Musquodoboit
5 H.C. Sanders & Son Ltd. New Ross
6 Soil Enrichment Ltd. Port Williams
7 Terra Nova Humas Canada Ltd. Sydney River
8 Valley Fertilizers Ltd. Kentville
INFRASTRUCTURE
Full Time Farmers
-as a percentage of the total Labour Force
more than 5%
3 - 5%
2 - 3%
1 - 2%
less than 1%
A part time farmer is defined as one who has more than 156 days of paid work, off the farm, each year.
Full Time/Part Time Farmers
County Full Time Part Time
Annapolis Co. 226 99
Antigonish Co. 242 66
Cape Breton Co. 84 49
Colchester Co. 509 167
Cumberland Co. 612 163
Digby Co. 192 74
Guysborough Co. 68 18
Halifax Co. 131 70
Hants Co. 377 137
Inverness Co. 112 44
Kings Co. 1151 193
Lunenburg Co. 92 144
Pictou Co. 295 176
Queens Co. 18 28
Richmond Co. 23 12
Shelburne Co. 22 12
Victoria Co. 29 16
Yarmouth Co. 98 47
Nova Scotia 4281 1515
Sources : Nova Scotia Department of Agriculture and Marketing, 1984 Data and Statistics Canada, 1981.

INFRASTRUCTURE

Processing Plants and Products

Nova Scotia is ideally situated to harvest the rich resources of the Northwest Atlantic. The province has fostered an impressive on-shore fish processing industry. Indeed, the town of Lunenburg can boast the largest fish processing plant in North America.

The Nova Scotia Department of Fisheries recorded 253 licensed fish plants for 1985, including facilities which move fish and fish products within the province, between provinces, or out of the country. All fish plants which export products from Canada must also be registered by the federal Department of Fisheries and Oceans and must meet certain structural specifications subject to federal inspection.

As indicated in the map inset, the greatest concentration of fish processing facilities is found in Shelburne and Yarmouth Counties. A number of the small communities in this area have not one, but several fish plants, proof of the vital importance of the fishing industry to such places. Throughout Nova Scotia, and especially in coastal communities, the fishery is a major employer. There are over 12,500 fishermen in the province, and over 7,300 workers engaged in fish processing. As well, substantial employment is generated by businesses which support and service the fishing industry.

The adjacent map displays information concerning fish species, plant size, type of production, and equipment capabilities. The plants range in size from those of small lobster and fresh fish dealers to large, diversified operations. While some plants specialize in particular species or processes, others handle many products. A large number of plants produce dried salt fish with a variety of cures and end products. Fresh dressed fish has become a popular and profitable product. Other plants process fresh and frozen groundfish fillets, frozen and cured herring, fresh or frozen scallops. High quality canned products include canned herring in sauce, mackerel, lobster, and queen crab.

Because of its diversity, Nova Scotia's fishing industry offers a wide variety of seafood products. In addition to those noted above, food products include cooked shrimp, pickled gaspereau, halibut steaks, and swordfish, not to mention such exotic delicacies as herring roe, cod tongues and cheeks, northern shark, monkfish tails, eels and winkles. Fish meal and oils are also produced, as byproducts of food processing operations.

Nova Scotia Fish Exports: Canada is the world's largest exporter, measured by value, of seafood products, and all indications are that the richness of its fisheries resource will enable it to maintain this position. In terms of both landed weight and value Nova Scotia is a leader in Canada, contributing 28% of the total Canadian fishery exports value.

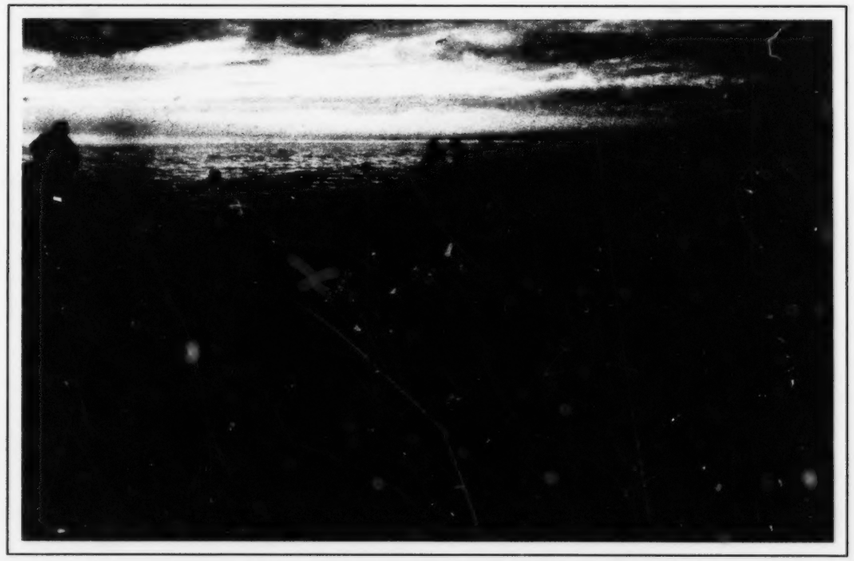
The United States is by far the largest importer of Nova Scotia fish. All species are included, in a wide range of forms including live lobster, fresh, frozen and salt groundfish and pelagic species, fresh and frozen shellfish, and a variety of canned and smoked products.

Continental Europe is the second largest export market for Nova Scotia fish. Herring are sold to West Germany, while lobster and smaller quantites of groundfish, crab, and shrimp are marketed to virtually every European country. The United Kingdom is a major buyer of cod, lobster, and frozen or canned shrimp and crab, while Japan is the principal importer of fresh Nova Scotia tuna, herring roe, and shellfish in the Pacific rim area. The following table shows the top ten foreign markets for Nova Scotia fish in 1984, and their relative economic importance to the industry.

Country	Metric Tons	$,000	% of Total Export Value
United States	88,960	310,386	73.75
United Kingdom	10,677	17,620	4.0
Japan	3,768	11,253	2.75
France	2,785	10,113	2.5
West Germany	6,946	7,436	1.75
Puerto Rico	2,460	5,901	1.5
Belgium-Luxembourg	737	5,530	1.5
Netherlands	624	4,355	1.0
Sweden	986	3,298	.75
Trinidad-Tobago	773	2,020	.5
Others	37,918	42,772	10.0
Total	156,634	420,684	100.0

Nova Scotia is located adjacent to some of the world's best fishing grounds. It is also situated directly on the major trading routes between North America and Europe. Shipping fish products can be done very efficiently. Ferries operate daily between Yarmouth, N.S. and Bar Harbour, Maine, and between Digby, N.S. and Saint John, N.B. carrying refrigerated trailer loads of fresh fish products to markets in Canada and the northeastern United States. Halifax has both a large container port and an international airport which ensure fast, efficient distribution of fish products worldwide. Direct cargo flights are scheduled from Halifax to London and to Paris, while connections to other major European and North American cities can be made via Montreal or Toronto.

As the industry grows, there is keen interest in developing new fish products, both from traditional species and from species for which a fishery is just being established. As a result, the list of Nova Scotia's seafood products can be expected to lengthen over the coming years.



The rich fishing grounds of the Scotian Shelf attracted Europeans to Nova Scotia waters before the start of colonization began, and fishing has been a mainstay for many of the province's small seaside communities to this day. Lobster, scallops, and cod account for more than 2/3 of the landed value, while over twenty other commercial species make up the balance of the catch.

Exclusive Canadian management of a 200-mile fisheries jurisdiction was implemented in 1977 to improve levels of fish stocks and to facilitate protection of the resource against over-fishing.

The Fishery

The Significant Species

In a province with over 10,000 km (6,000 mi.) of coastline it is inevitable that fishing should be a major industry. Indeed, the commercial fishery is the oldest resource industry in Canada. As early as the 16th century, Portuguese, French, and English fishermen harvested cod to be salted and dried for European markets. Today cod is still one of the most important single species in the Nova Scotia fishery; in all, however, over two dozen varieties of fish and marine products make up the commercial catch.

For administrative purposes, Nova Scotia is divided into 44 fisheries statistical districts. In the accompanying map, significant species are defined as those which contribute 15% or more to the landed value or tonnage of fish in each statistical district. Catches are expressed in round fresh weight, regardless of whether they are landed whole or gutted at sea.

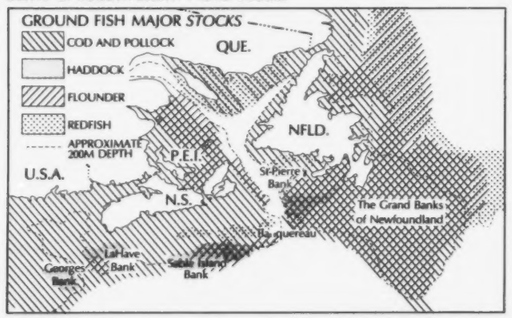
Dollar values for different species can differ widely, as may be seen from the following chart of 1984 average Nova Scotia prices for popular varieties of fish:

Species	Price/Ton	Species	Price/Ton
Lobster	$7,266	Swordfish	$4,730
		Haddock	708
Scallops (shell weight)	1,521	Cod	395
(meat weight)	12,168	Herring	142

The map indicates that the high valued species, lobster and scallop, are of primary importance to the fishery in the western section of the province. Lobsters contribute substantially to earnings in several districts even though their landings are less than 15% of the total tonnage. In eastern districts, groundfish comprise the bulk of the landings, with the result that tonnage is high compared to value.

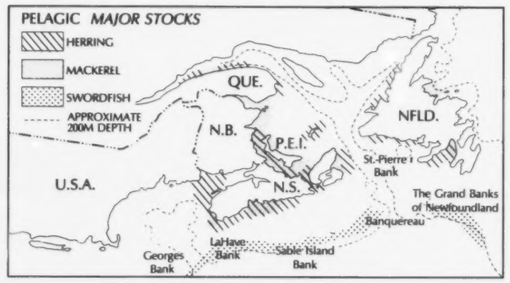
In general, species are categorized in four major groups according to certain common characteristics.

Groundfish: Cod, haddock and flatfish are among the groundfish species which, as the name suggests, live and feed on or near the sea bottom and are captured mainly with otter trawls, baited hooks, or gill nets. Except for the Northumberland Strait area, where hake and winter flounder are the dominant species, cod makes up the most significant tonnage of groundfish landings in most districts. Haddock and pollock are also valuable catches, particularly in the Bay of Fundy and its approaches and on the banks of southwestern Nova Scotia.

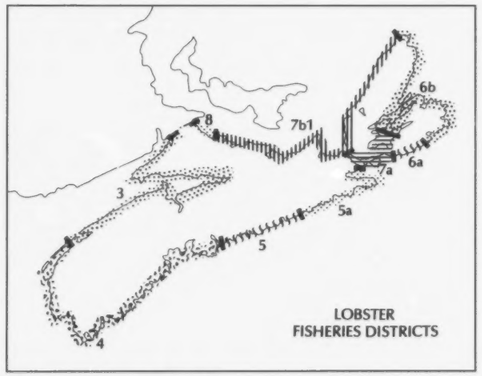


Pelagic and Estuarine: Pelagic, or open ocean species include herring, mackerel, tuna, and swordfish. Salmon and gaspereau are termed estuarine because they return from the sea to estuaries and freshwater streams during spawning migrations. Fish in this category feed near the surface and are harvested with gill nets, purse seines, or fish traps.

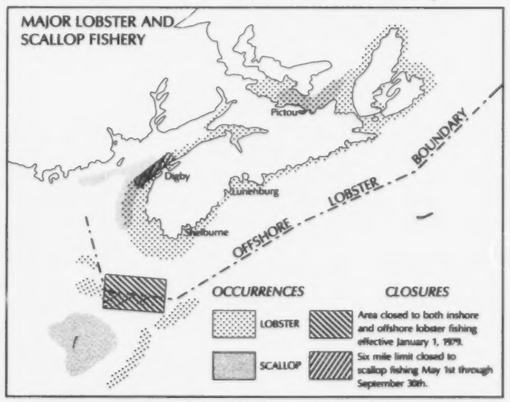
Herring and mackerel dominate pelagic fish landings. Although herring are captured fairly close to shore, the catches of the purse seine fleet are shown as offshore landings. Inshore landings of herring and mackerel are from fish traps, gill nets, and, in Districts 37, 38, and 39, herring weirs.



Two large pelagic species, bluefin tuna and swordfish, are well known in Nova Scotia. Most swordfish vessels operate out of the southwestern part of the province, with landings especially concentrated in District 30. Tuna are caught mainly in Districts 13, 14, and 23, often by rod and reel on a recreational basis, or, notably in District 23, as an incidental catch in fish traps set for other pelagic species.



Molluscs and Crustaceans: Bivalves such as scallops, oysters and mussels are a major group of commercially harvested molluscs. In their adult form they are generally stationary bottom-dwellers and are harvested by dragging rake-like gear over the bottom. Crustaceans (e.g. lobsters, crabs), in contrast with the molluscs, move freely on the bottom and are taken in baited traps.



Together, scallops and lobsters constitute almost 50% of the landed value of all fish landed in Nova Scotia. Although their total landed weight is small compared to other species, they command such high unit prices that their importance is magnified.

Some 4,800 inshore boats work the entire coastline of the province for lobster, with the greatest concentrations in the Northumberland Strait, on Cape Breton Island, and in the southwestern region. A small offshore fleet of 8 vessels from ports in Districts 28, 30, and 31 take lobster from areas of Brown's and Georges Bank.

Scallops are landed in numerous ports in the province. The main beds, however, are found offshore, on the Canadian side of Georges Bank, in the Bay of Fundy and its approaches, and in the Northumberland Strait. Conservation regulations governing size of meats, pounds caught per trip, trips per four month period, and days at sea per trip, are in effect for the offshore areas.

Sea Plants: Irish moss, dulse, and knotted wrack or rockweed (*Ascophyllum nodosum*) are found in intertidal or shallow subtidal zones where they are harvested with mechanical or manually operated rakes or cutting devices.

Irish moss is harvested in southwestern Nova Scotia and in the Northumberland Strait. Several drying stations have been established to dry and bale it for processing and export. Carrageenin, which is extracted from the moss, is used as a jelling, emulsifying, and stabilizing agent in foods, drugs, paints, etc. Rockweed is also harvested in southwestern Nova Scotia, and is processsed there into alginic products.

Aquaculture: Since the late 1970's, aquaculture has been moving from pilot scale to commercial production. The traditional bottom culture of native oysters continues at a level (300 - 350 tons) much below productive capacity. Other species under more active commercial culture include the blue mussel, European flat oyster, Atlantic salmon, rainbow and speckled trout. Species under pilot production include native scallop, quahaug, bar clam and irish moss. The estimated 1985 production and landed values for commercial aquaculture are given below:

Species	Volume (tons)	Value ($)
Blue Mussels	375	375,000
Atlantic Salmon	125	1,250,000
Rainbow Trout	200	780,000
European Oyster	35	175,000
Native Oysters	250	300,000
Speckled Trout	10	40,000

These figures do not include the hatchery production of trout or salmon to enhance recreational fishing waters, smolt (salmon yearling) supply to growers, or the production of bivalve shellfish for enhancement or sale to aquaculture.

Significant Species of Nova Scotia

Groundfish

- Cod — *Gadus morhua*
- Redfish — *Sebastes marinus*
- Winter Flounder — *Pseudopleuronectes americanus*
- Pollock — *Pollachius virens*
- Haddock — *Melanogrammus aeglefinus*
- Halibut — *Hippoglossus hippoglossus*
- Common Hake — *Urophycis spp.*

Pelagic and Estuarial Fish

- Herring — *Clupea harengus harengus*
- Mackerel — *Scomber scombrus*
- Gaspereau — *Alosa pseudoharengus*
- Salmon — *Salmo salar*
- Rainbow Trout — *Salmo gairdneri*
- Bluefin Tuna — *Thunnus thynnus*

Shellfish

- Lobster — *Homarus americanus*
- Soft-shelled Clam — *Mya arenaria*
- Queen Crab — *Chionoecetes opilio*
- Scallop — *Placopecten magellanicus*
- Oyster — *Crassostrea virginica*

Gulf of St. Lawrence
Prince Edward Island
Northumberland Strait
New Brunswick
U.S.A.
Chéticamp
Sydney
Glace Bay
Amherst
New Glasgow
Antigonish
Port Hawkesbury
Truro
Guysborough
Kentville
Windsor
Annapolis Royal
Digby
Halifax
Lunenburg
Yarmouth
Shelburne
Sable Island
QC

SIGNIFICANT SPECIES

Those Species Whose Dollar Value or Tonnage exceeds 15% of the Total

DOLLARS	METRIC TONNES (round)
greater than $30,000,000	greater than 50,000
$10,000,001 - $20,000,000	20,001 - 40,000
$5,000,001 - $10,000,000	10,001 - 20,000
$1,000,001 - $5,000,000	1,001 - 10,000
$200,001 - $1,000,000	101 - 1,000
less than $200,000	less than 100

Groundfish

- C — Cod
- Ha — Haddock
- Hl — Halibut
- Fl — Flounder
- Po — Pollock
- R — Redfish
- CH — Common Hake

Pelagic and Estuarial Fish

- Mackeral
- Herring
- Gaspereau
- Salmon
- Rainbow Trout
- Bluefin Tuna

Shellfish

- Lobster
- Scallop
- Queen Crab
- Soft-shelled Clam
- Oyster

Other

Source: Nova Scotia Department of Fisheries and Fisheries and Oceans Canada, 1984.

The Value of the Nova Scotia Fishery

The map facing this page portrays the aggregate dollar value of the catch in each of the 44 fisheries statistical districts in Nova Scotia. It also depicts the portion of the catch value furnished by the inshore versus the offshore section of the fishing fleet. The inshore fleet is defined for statistical purposes as consisting of vessels of less than 25.5 gross tons, while the offshore fleet is comprised of larger vessels. In 1984, the offshore fleet took 58% of the total Nova Scotia catch by value, while the inshore fleet accounted for the remainder.

A significant point illustrated by the map is that the section of the province lying west of a vertical line drawn through Halifax is the richest fishing region of Nova Scotia. Most of the higher valued species, such as lobster, scallop, swordfish, and haddock, are landed in this area.

The fishery in the eastern section of Nova Scotia is more seasonal in nature. Here, most of the fleet consists of inshore vessels, with the exception of a few offshore ports in Cape Breton and Guysborough Counties. The Northumberland Strait region has an entirely inshore fishery, being icebound for three to four months of the year. Such factors account for the generally lower levels of activity and value in these areas.

Landed Value: The following table summarizes the total landings and value for the Nova Scotia fishery in 1984:

Species Category	Metric Tons	Landed ($) Value
Groundfish	264,472	$112,601,000
Pelagic and Estuarine	76,848	14,938,000
Molluscs and Crustaceans	47,246	134,723,000
Sea Plants	8,096	815,000
Other	12	10,000
Totals	396,674	$263,087,000

The two most valuable species within the groundfish category are cod and haddock, accounting for 49% and 20% respectively. Herring (66%) and swordfish(17%) are the most significant species in the pelagic and estuarine fishery, while lobsters (60%) and scallops (33%) account for almost all the molluscs and crustaceans. The sea plants group consists almost entirely of Irish moss and rockweed, while the "Other" category includes a range of by-products such as fish scales, viscera, cheeks, tongues, and roe.

Innovative attempts have been undertaken recently to promote other, less utilized species. Species such as shark and dogfish, which have historically been considered of little value, are being promoted and marketed to add value to the fishery resource base. Aquaculture projects, too, have great potential to increase the value of Nova Scotia's fishery resource, with salmon, oysters, trout, mussels, Irish moss, dulse, and scallops being identified as candidates for increased production and marketing.

Market Value of Landings: Landed value is the price fishermen receive for their catch. Market value (FOB plant) includes the value added during processing, and depicts the total value of production. The market value of Nova Scotia's seafood production has been increasing steadily in recent decades, and has historically been approximately twice the landed value of fish as shown below for the years indicated:

Year	Landed Value ($,000)	Market Value ($,000)
1960	26,094	51,753
1965	49,371	93,443
1970	55,652	105,939
1975	91,010	208,574
1980	230,911	438,799
1981	263,727	484,182
1982	259,411	523,191
1983	276,451	497,664
1984	263,087	473,606

Nova Scotia's landed catch of fish is processed into a variety of seafood products. The largest proportion is frozen, much in the form of groundfish blocks for further processing into fish sticks and portions. The institutional and food service market is an important target for sales of frozen groundfish products. Considerable quantities of fillets, scallops, herring fillets, and bait also find their way to market in frozen form. In all, frozen products accounted for 55% of the value of production in 1983.

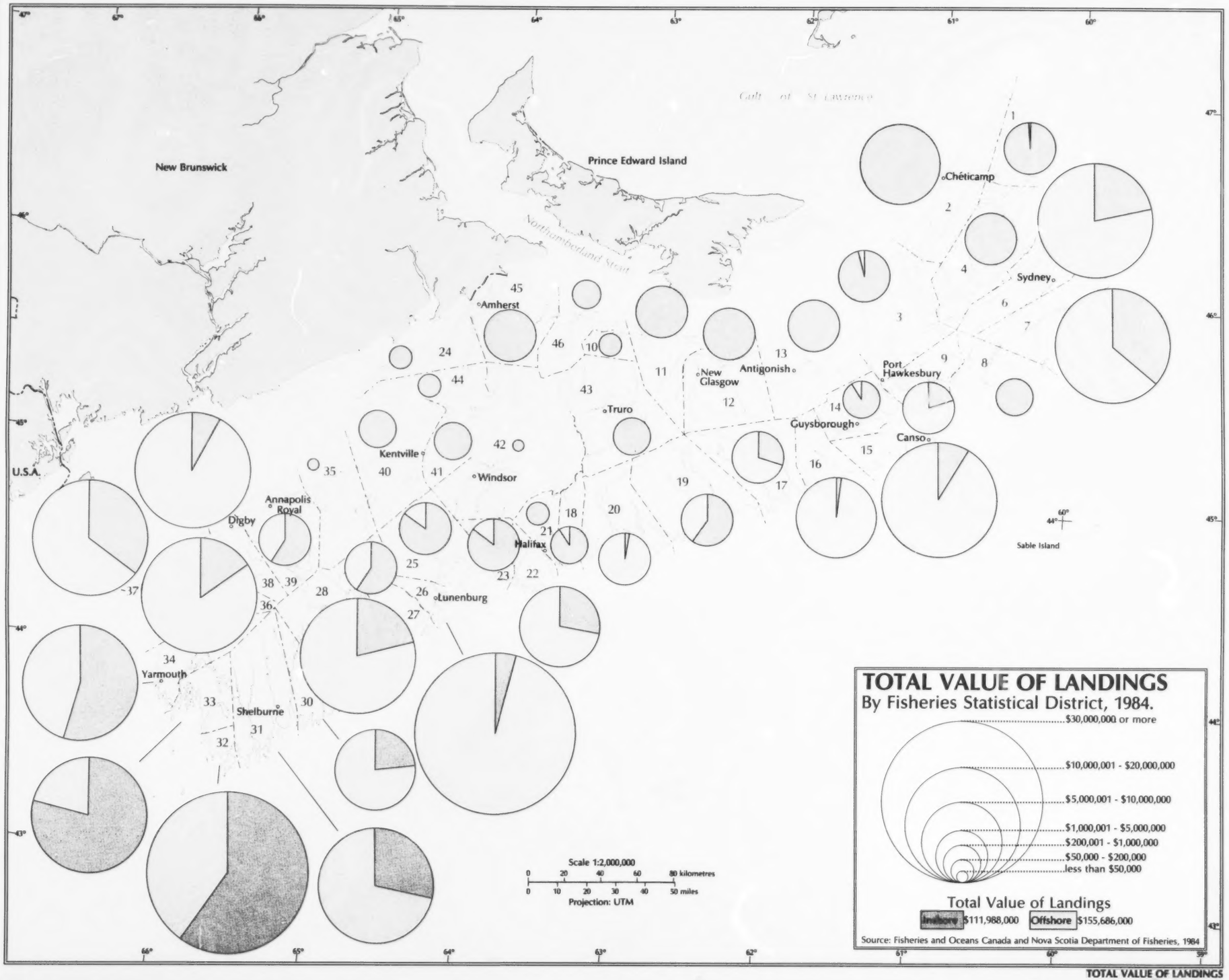
Fresh fish, whether filleted, dressed, or round, and including both live and cooked lobster in the shell, accounts for another large share of the market. In this form, fish has gained greatly in popularity in both export and local retail markets as dependable transportation and refigeration systems provide the assurance of a top quality, fresh product at the point of sale.

Once the standby of the industry, dried salt fish in a variety of grades and cures still commands a significant market share. The main sales (of light and heavy salt cod, pollock, cusk, etc.) are to certain ethnic communities in the United States, to the Iberian Peninsula, and to the Caribbean.

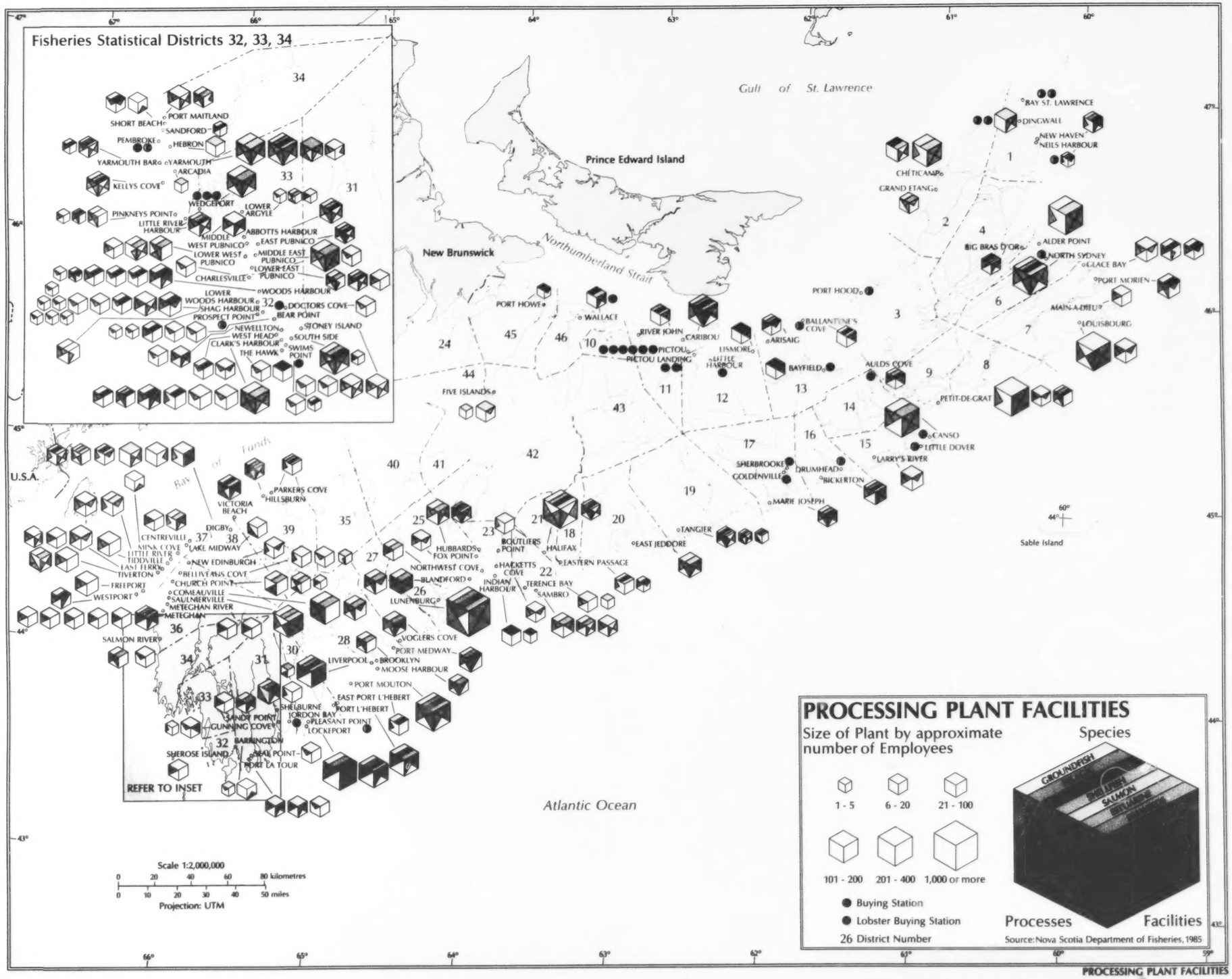
Smoked fish, while not matching the value of other products, did contribute close to $3 million to Nova Scotia's fish production in 1983. Popular smoked products include smoked cod, finnan haddie (smoked haddock), smoked mackerel, herring bloaters and kippers. Marinated herring, widely known in Nova Scotia as Solomon Gundy, is another flavourful specialty product.

The principal canned fish products in Nova Scotia are herring fillets, mackerel, and lobster. Fish meal and oil are produced from fish plant waste.

Fishery production patterns have shown some changes in recent years. Lower landing levels, for example, have resulted in a decrease in frozen scallop production. The market has seen a slight shift away from frozen cod blocks and towards more saltfish and fillet production in specialty packs. This has been in response to consumer preference for lighter, more natural products (mainly fresh and frozen fillets) and to a better price margin on such products.



TOTAL VALUE OF LANDINGS



PROCESSING PLANT FACILITIES

The Fishing Fleet and Assoicated Industries

The Nova Scotia fishing fleet is comprised of approximately 6,300 vessels. Although variations in size and fishing style prevent the precise classification of these boats into a rigid system of inshore and offshore categories, a somewhat arbitrary division by gross tonnage is frequently used to describe the component segments of the fleet.

Thus some 5,629 vessels of less than 25.5 gross tons are referred to as *inshore* fishing boats; the 456 boats of 25.5 to 50 G.T. are said to be *nearshore* vessels; and the 181 vessels of more than 50 G.T. make up the *offshore* segment. Generally speaking, vessels of nearshore and offshore tonnage are suited for year-round fishing, while those in the inshore classification are usually tied up or hauled out of the water during the winter months. An exception to this pattern is found in southwest Nova Scotia where many inshore vessels fish year-round.

Especially in the inshore fleet there are some very distinctive boat designs to be found in the Nova Scotia fishery. In the Atlantic and Bay of Fundy waters, the Cape Island type hull is most popular. Hulls of this style, with their high bows and long, low workspace aft, range from open, outboard-driven skiffs of less than six metres in length, to large (14m) boats with living accommodations and a wheelhouse containing modern, electronic fishing and navigation equipment.

A somewhat different design evolved in the Northumberland Strait, where the inshore vessels are constructed from narrow planks and edge-nailed without caulking. They have high, flared bows for sturdiness in the short, steep waves which prevail in the comparatively shallow waters where they fish.

Inshore boats are usually restricted to day use, although some may make occasional trips of two or three days or more during the summer months. Nearshore vessels, ranging from 15 to 20 metres in length, have the size capability to stay at sea routinely for perods of as much as four to six days, and can fish correspondingly farther from shore. Most of the vessels in this category are longliners, draggers, gillnetters, small herring seiners, and small scallop draggers.

Large herring seiners, scallop draggers, longliners, and trawlers are among the types making up the offshore fleet. In length they range from 20 metres to over 60 metres. Such vessels fish the offshore banks beyond the designated 12-mile inshore zone, and may remain at sea for two weeks at a time. The largest vessel in the Nova Scotia fishing fleet is a freezer trawler which can make trips of three months' duration.

The size of productivity of the Nova Scotia fishery has encouraged the development of an extensive and complex infrastructure of supporting industries and facilities. Taken together, these elements constitute a major component of the economy of Atlantic Canada.

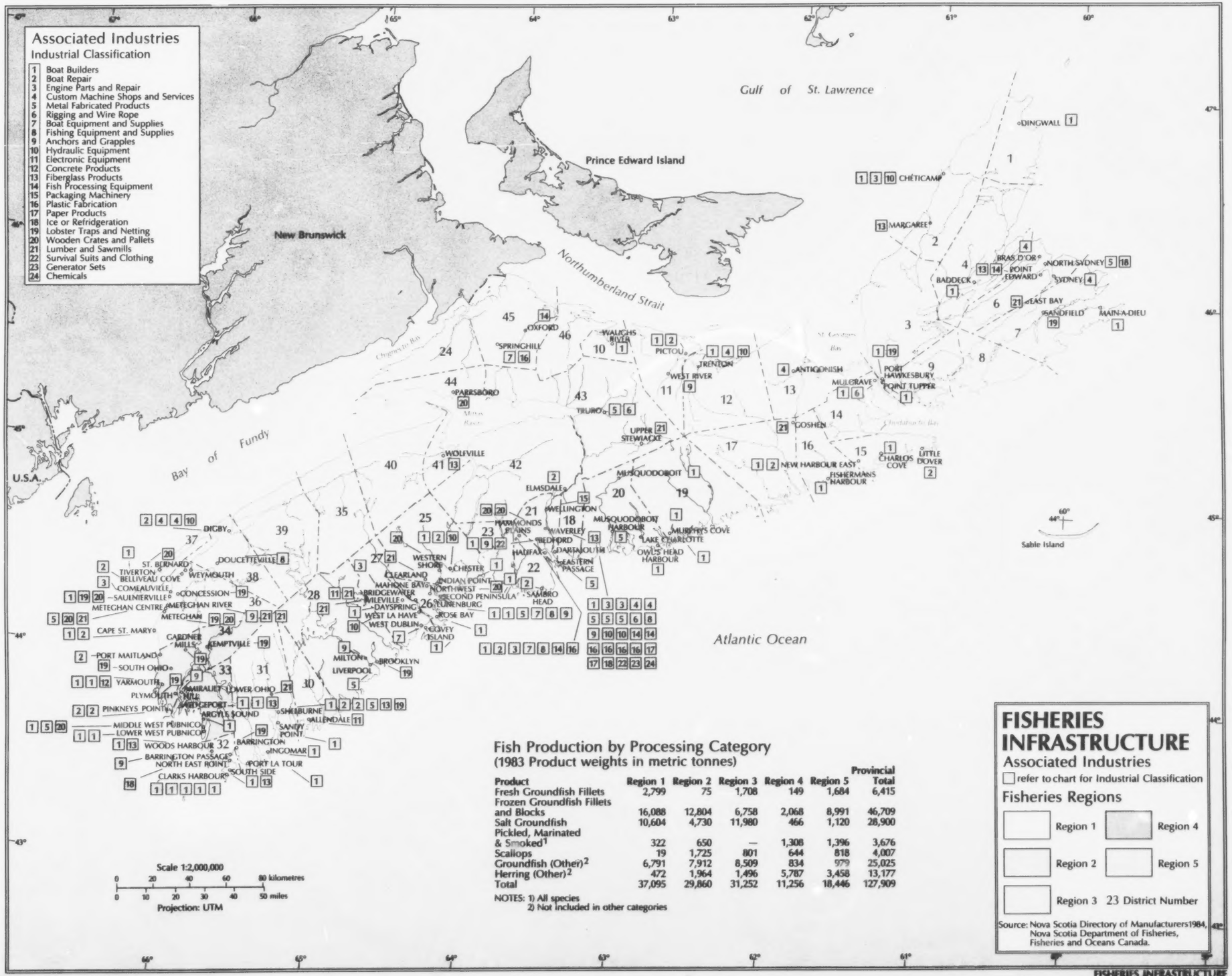
With such a large and active fishing fleet, it is to be expected that Nova Scotia should have a well-developed boat-building and repair industry. Normally, fishing vessels undergo routine maintenance and repairs on an annual basis in order to extend their useful life and to provide a measure of safety for the fisherman.

In 1985, there were a total of 109 approved boat builders offering vessel repair and/or construction services in ports around the province. Of these, 63 were located in the Southwestern Nova Scotia Region.

The boat-building industry has the capacity to build or repair any size or type of fishing vessel. By far the majority of yards produce wooden hulled longliners and Cape Island boats typical of the inshore fishery. A few, however, produce larger wood or steel vessels, and in recent years, a growing number of boatyards in southwestern Nova Scotia have been working in fibreglass.

In addition to boats and boat repairs, the fishery requires a fairly highly developed system of capital structures. Wharves and haul-out facilities or slipways are essential. The fish processing sector depends on highly technical services ranging from dependable three-phase power, to rail and road transport systems linking markets with port communities which may be quite isolated from the usual traffic patterns.

A wide variety of other goods and services must also be provided for the fishing industry. As the adjacent map demonstrates, metal-working, refrigeration, fishing gear and equipment manufacturing, storage and packaging, and a host of other enterprises allied to the fishery tend to be most heavily concentrated around the major fishing ports. This illustrates a principle which can be observed in the case of Nova Scotian agriculture and forestry as well, namely that secondary industries and infrastructure tend to proliferate close to the major locations of primary production.



Fish Production by Processing Category
(1983 Product weights in metric tonnes)

Product	Region 1	Region 2	Region 3	Region 4	Region 5	Provincial Total
Fresh Groundfish Fillets	2,799	75	1,708	149	1,684	6,415
Frozen Groundfish Fillets and Blocks	16,088	12,804	6,758	2,068	8,991	46,709
Salt Groundfish	10,604	4,730	11,980	466	1,120	28,900
Pickled, Marinated & Smoked[1]	322	650	—	1,308	1,396	3,676
Scallops	19	1,725	801	644	818	4,007
Groundfish (Other)[2]	6,791	7,912	8,509	834	979	25,025
Herring (Other)[2]	472	1,964	1,496	5,787	3,458	13,177
Total	37,095	29,860	31,252	11,256	18,446	127,909

NOTES: 1) All species
2) Not included in other categories

FISHERIES INFRASTRUCTURE

Associated Industries

☐ refer to chart for Industrial Classification

Fisheries Regions

Region 1 — Region 4

Region 2 — Region 5

Region 3 — 23 District Number

Source: Nova Scotia Directory of Manufacturers1984, Nova Scotia Department of Fisheries, Fisheries and Oceans Canada.

Nova Scotia is one of the most geologically complex and interesting areas of Canada. The wealth and variety of its mineral resources attest to this. Coal has long been the province's foremost mineral product, accounting for over 55% of the gross value of the output of the mining industry in 1984. However, 63.1% by value of Canada's gypsum production is centred in Nova Scotia as well. Salt, barite, gold, lead, peat, celestite, limestone, clay, tin, and natural gas are other commodities found in significant quantities.

Geology

Geology

Only the briefest glance at the adjacent map is needed to demonstrate just how complex the geology of Nova Scotia really is. The many interlocking terranes resemble the pieces of a gigantic jigsaw puzzle, an apt comparison, for earth scientists believe that the territory of modern Nova Scotia is indeed a product of different parts of the earth's surface that formed and came together over hundreds of million of years. The resulting diversity, especially where it is exposed along thousands of miles of rocky coastline, holds endless facination for rockhounds, prospectors and geologists.

One of the most visible features on the map is the Minas Geofracture traverses the province from the Minas Basin to Chedabucto Bay. The area north of this line is known as the Avalon Terrane.

To the south of the Minas Geofracture lies the Meguma Terrane, where an entirely different array of Early Paleozoic rock types supports the theory that the two terranes were formed in different time periods and at a considerable distance from one another.

Plate tectonics is a term used to describe the slow, inexorable movement of sections of the earth's crust. It was this process which brought together the Avalon and Meguma terranes to form the foundations of present-day Nova Scotia.

The oldest rocks in Nova Scotia were formed during the Precambrian period, over 600 million and perhaps as many as a billion years ago. They occur only in the Avalon Composite Terrane, which may be subdivided into three terranes which were amalgamated at the end of the Precambrian. These are the Cobequid and Antigonish Highlands and Cape Breton Island.

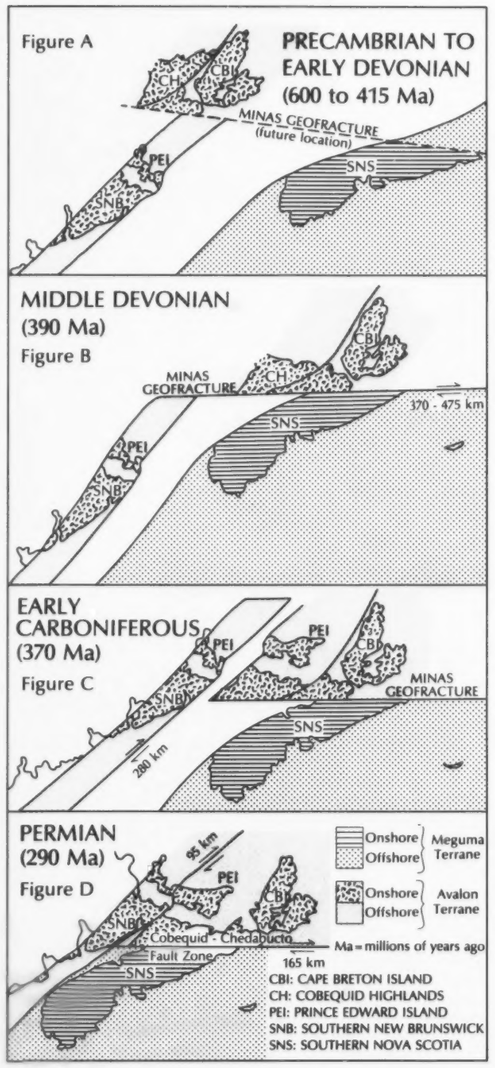
The original sedimentary sandstones, limestones, and shales have been changed to gneisses, schists, marbles and quartzite by repeated episodes of heat, pressure, and deformation. They are found in the Cobequid Highlands and Cape Breton Island. Younger Precambrian rocks of volcanic origin occur here as well, especially in the Cobequid and Antigonish Highlands and southeastern Cape Breton Island. These rocks formed in a volcanic setting similar to that found in the southwestern Pacific Ocean, with two chains of volcanic islands separated by a small ocean basin.

Figure A illustrates one idea of how the different terranes were positioned at the end of the Precambrian period (580 million years ago). Although the landforms at that time were vastly different from their present appearance, the outline of the modern coast has been used in the diagrams on this page to provide readers with a familiar reference point.

During the Cambrian, Ordovician, and Silurian periods (600 to 400 million years ago) enormous masses of sediments were deposited on the bottom of the seas, forming layers of sandstone and shale in the Meguma Terrane. In the Avalon Terrane, thin continental to shallow marine rocks were deposited. The seas were cold, and because very few fossils have been found, it is assumed that they were nearly lifeless. As the Avalon Terrane approached the "North American land mass", the waters became shallower and warmer. The abundance of life in these shallow seas is visible in progressively more diverse fossil bearing rocks.

As the Avalon and Meguma terranes moved closer to North America, a series of collisions occurred, producing great mountain chains. The first collision took place about 400 million years ago, between the Avalon Terrane and the "North American land mass" and was followed, about 35 million years later, by the thrusting of the Meguma Terrane over the Avalon Terrane. Figure B shows the relative positions of the two terranes at the Middle Devonian stage, about 360 million years ago. Continued episodes of buckling, faulting, and folding, about 320 and 270 million years ago, further telescoped the region (see Figures C and D). The joining of the two terranes (see Figure C) was part of a process along the entire eastern border of North America which produced the Appalachian mountain chain.

MOVEMENT OF NOVA SCOTIA THROUGH TIME



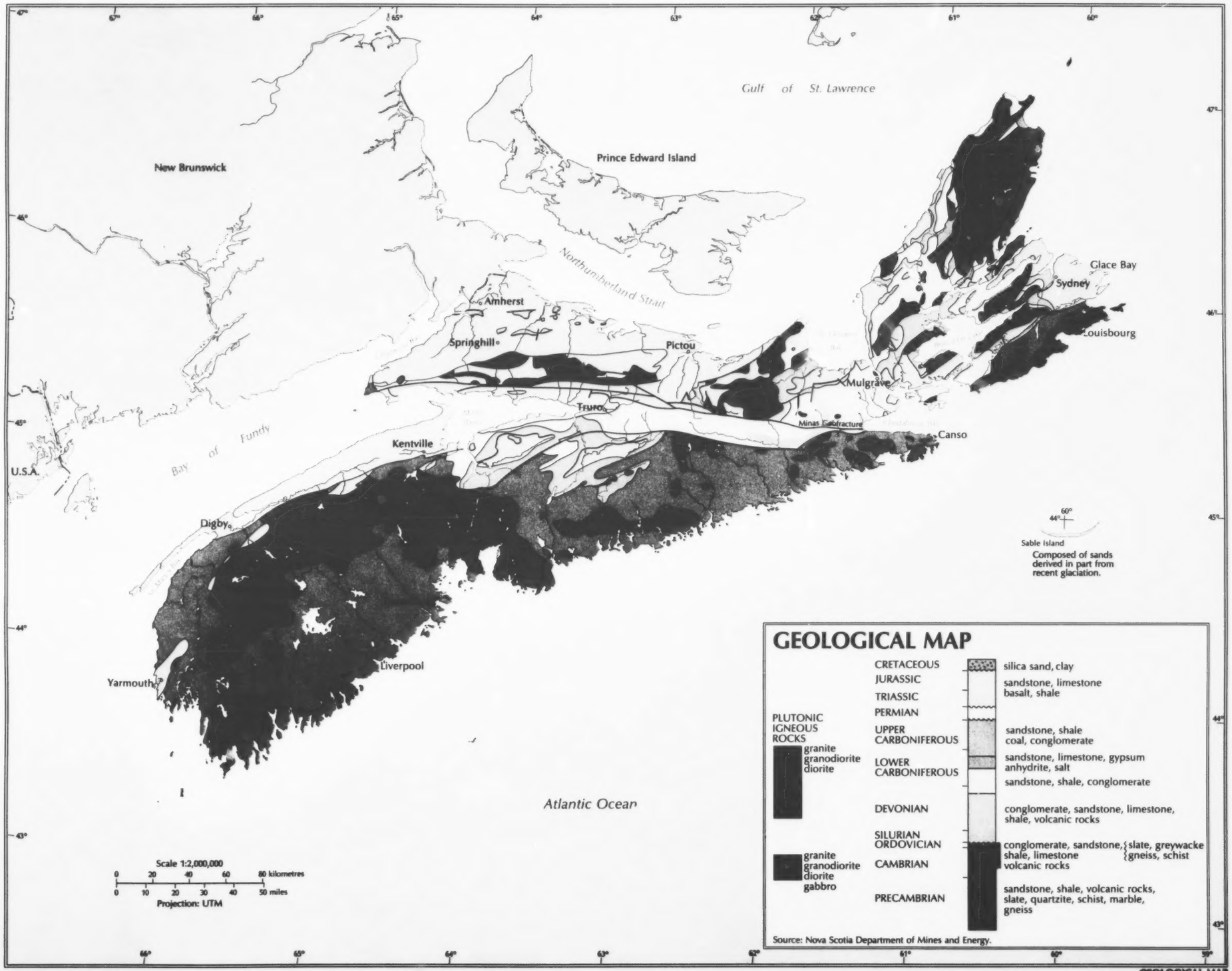
During the Carboniferous period (360-290 million years ago), the mountains, thought to have once been at least as high as today's Alps, were severely eroded by active river systems. Seas rose, precipitating the large quantities of salt, gypsum, anhydrite, and limestone found in the lower Carboniferous rocks of the area (see map).

As the seas retreated, enormous swamps were formed, dominated by huge ferns and providing a habitat for amphibians and the earliest reptiles. The region's coal deposits were formed during this period, and abundant fossils which are visible today in the exposed cliffs at Joggins, overlooking the entrance to the Cumberland Basin.

For about 150 million years, Nova Scotia was part of a huge supercontinent. Movement continued along the various fault lines, and the area began to assume its present familiar shape as shown in Figure D. About 230 million years ago, during the early Triassic Period, forces in the earth's crust began to break up the one continent, creating rift valleys now marked by the Bay of Fundy and the Minas Basin. A second set of stresses towards the end of the Jurassic Period (about 140 million years ago) opened enormous rifts to the east of present-day Nova Scotia. As these grew wider they were flooded with sea-water, and the Atlantic Ocean was born.

Between the birth of the Atlantic and the Ice Age, nearly 140 million years passed. The geological history of the period is relatively unknown, however, because the scouring effect of glaciation eroded most of the materials laid down during this time.

The youngest rocks are those formed by glacial deposits in the last 100,000 years. The last Ice Age covered most of the Maritime region with glaciers which scoured the land in a southeasterly direction. The glacial ice deposited vast quantities of sand, silt and gravel in distinctively shaped, elongate hills (drumlins) such as Citadel Hill in Halifax. So much of the earth's available water was locked into the ice cap that the continental shelf was exposed, but as the glaciers receded, sea levels returned to approximately their present status, producing the numerous deep inlets and sheltered harbours which are typical of the southern and eastern shores of Nova Scotia. By 12,000 years ago the ice had virtually disappeared from the region, and archaeological evidence from a site at Debert, west of Truro indicates that the area was already inhabited by nomadic, hunting people as early as 10,600 years ago. The shift from a geological to a human, historical time scale had begun.



GEOLOGICAL MAP

Coal Resources

Coal forms from peat, an accumulation of partially decomposed (humified) plant material in swamps with a high water table and poor drainage. Later burial under sedimentary deposits, and compaction due to water loss results in the formation of beds of coal known as "seams".

The major coal seams of Nova Scotia were formed in the Late Carboniferous period, between 340 and 290 million years ago, within the broad Fundy Basin of deposition (see notes facing the geological map). During the development of this large basin, sedimentation was sometimes localized in areas such as the Cumberland, Pictou, and Sydney sub-basins; sites where repeated episodes of coal formation occurred.

The Major Coalfields: The geologically oldest productive coal districts in the province, notably the Port Hood and Saint Rose-Chimney Corner coalfields on the western coast of Cape Breton Island, occur within the Riversdale Group, which was laid down over much of northern mainland Nova Scotia and Cape Breton Island.

More extensive coalfields are part of the Cumberland Group, which is mainly restricted to the Cumberland Basin. Here the Joggins-Chignecto and Springhill coalfields are situated, along with less extensive coal districts at Salt Springs and near Oxford.

The Pictou Group was subsequently deposited over much of the northern mainland and Cape Breton Island. The most extensive and youngest coal deposits of Nova Scotia occur within this group, including the Sydney, Inverness, and Mabou coalfields of Cape Breton Island, and the Pictou and Debert-Kemptown coalfields of the northern mainland.

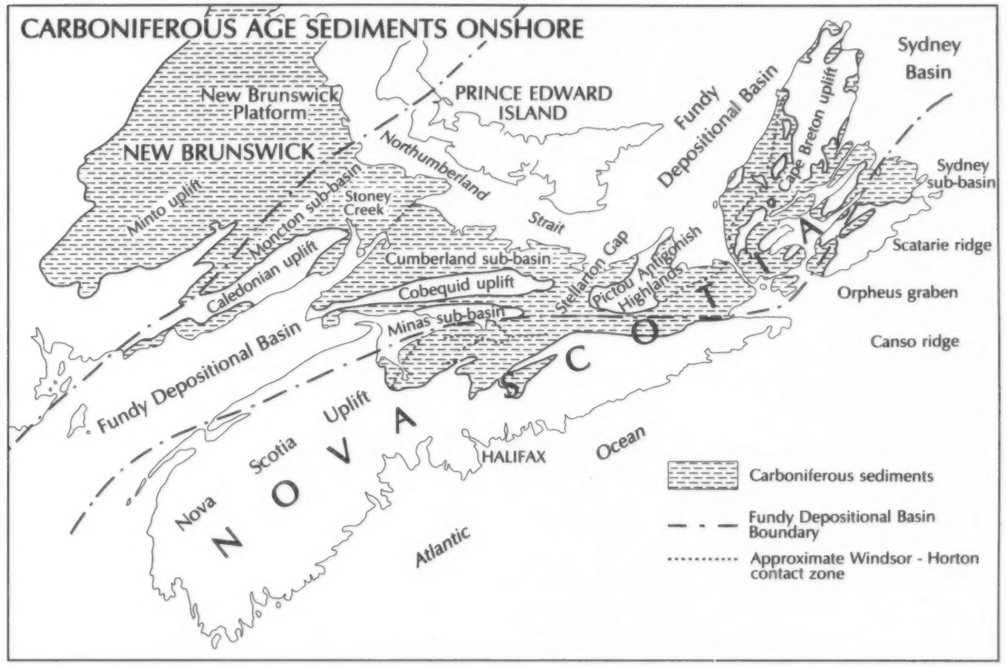
Quantity and Quality of Coal Resources: The coal resources of Nova Scotia are estimated to be approximately three billion tonnes. The accompanying map depicts the distribution of these coal resources, the bulk of which occur within the Sydney coalfield. It is highly probable that additional, undiscovered resources lie within areas of the province's coal basins, such as the Cumberland Basin and off the western shore of Cape Breton Island.

Coal quality varies significantly from coalfield to coalfield, and from seam to seam within a coalfield. The majority of Nova Scotia coals are classified as high volatile bituminous A, although high volatile bituminous B and medium to low volatile coals are also present. Historically, the bulk of Nova Scotian coal has been used for heating and power generation, although a significant portion has been utilized as metallurgical coal.

Mining Nova Scotia Coal: The mining of coal has been a major factor in the industrial and social development of Nova Scotia. The first recorded coal mining in the province was undertaken in 1720 to supply the French fortress at Louisbourg. At about the same time, Acadian settlers began extracting coal from the cliffs at Joggins in Cumberland County. Coal was mined on the East River in Pictou County as early as 1807.

After 1857, when the General Mining Association surrendered most of its monopoly on the Nova Scotia coalfields, the pace of coal development accelerated as numerous, competitive coal companies were formed. Peak production was reached around 1912, and matched again during the 1940's.

By the late 1950's coal mining in the province experienced a sharp decline as less expensive imported oil replaced coal in many of its traditional markets. With the upheaval in world energy prices in the 1970's, interest in the coal resources of Nova Scotia was rejuvenated and production has continued to increase yearly.



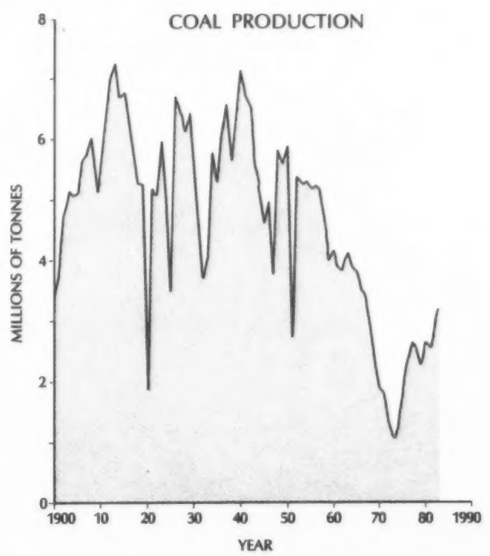
Each coalfield has particular economic, geotechnical, and environmental considerations that must be addressed in determining the mineability of its resources. The ultimate goal is the economical extraction of the maximum amount of coal from each deposit, but it is of equal importance that this goal be achieved in the safest possible manner, and at the lowest environmental cost.

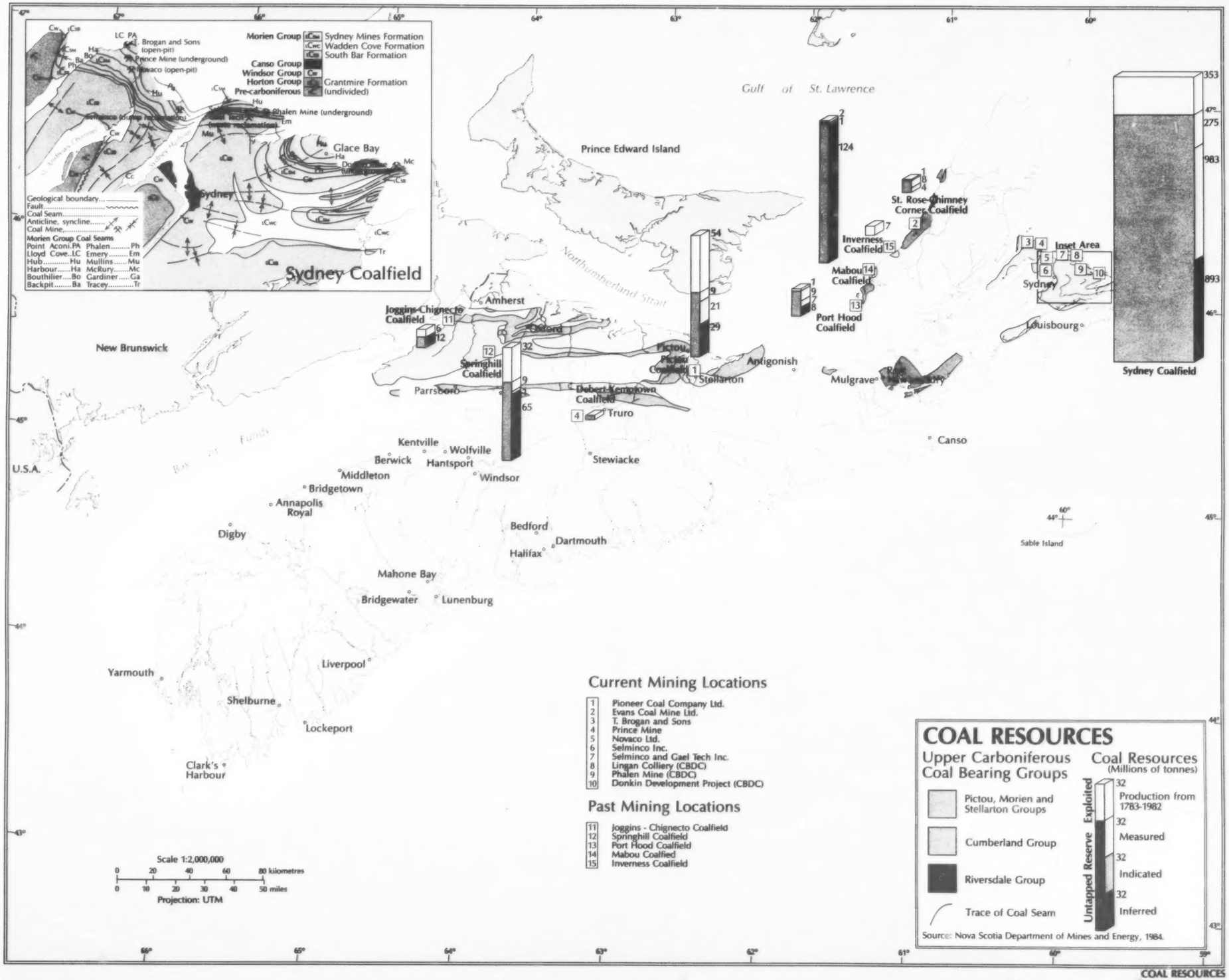
The decision to mine a particular seam of coal depends on the following factors:

1. the thickness and quality of the coal seam,
2. the volume of coal that can feasibly be recovered once mining engineering criteria have been considered,
3. the vertical depth of the seam below ground level or, in submarine areas, below sea level,
4. the environmental effects of mining the seam, and
5. economic factors, including production costs and markets

The mining method depends on the depth of the coal seam from the surface. If the seam lies at depths in excess of 100 metres (330 feet), underground mining methods are used. If the seam lies at shallow depths with a minimum of overburden, surface-mining techniques are employed.

Over 90% of coal production in Nova Scotia is from underground mines, with the remainder coming from surface mines and coal dump reclamation. The underground coal mining methods used in Nova Scotia are advance longwall, retreat longwall, and room and pillar. Most of the Cape Breton Development Corporation coal mines in the Sydney coalfield are submarine; that is, the coal is mined from a surface position onshore, following the seams outwards, far below the Atlantic Ocean.





COAL RESOURCES

Peat Resources

Peat bears a close similarity to coal in that it, too, originates from humified or decomposed vegetation. Age is the chief difference between the two; whereas Nova Scotia's coal seams were laid down over three hundred million years ago, the peat bogs of the province only began to form about 8-10 thousand years B.C., after the withdrawal of the last Ice Age. Indeed, the process continues to the present day.

In the harsh, poorly drained environment of the post-glacial period, hardy marsh plants such as reeds and sedges were among the early forms of vegetation to re-establish themselves. As they grew and died, their remains were deposited under water, in cold, oxygen-poor conditions where decomposition was slow and incomplete. These species were frequently succeeded by prolific growths of moss *(Sphagnum spp.)*. Sphagnum grew, died, and humified in the same manner, gradually building up in layers as deep as 6 metres (20 feet) or more. Because of the typically slow rate of decomposition, the pollen, plant and animal remains, and mineral ash preserved in peat bogs are valuable sources of knowledge about the earth's recent biological history.

The Varied Uses of Peat: Brown, fibrous, and retaining much of its original plant structure, slightly decomposed sphagnum or peat moss is the basis of a large industry in Atlantic Canada where it is harvested for horticultural use as a soil conditioner and as an ingredient of potting soils. Fibre boards and planting pots are produced from peat moss, and the material is also used by industry in pollution control, both as a filtering medium and as an absorbent. Moss grade peat is exported from Atlantic Canada to the United States, Western Europe, the Middle East, South East Asia, Australia and New Zealand.

More thoroughly humified material, which looks like a dense, dark brown or black muck, is referred to as fuel grade peat, and is harvested, dried, and burned as an energy source in many parts of the world. Fuel peat is marketed as sods (dried chunks), pellets, or briquettes for commercial and residential heating. In sod or milled (powdered) form it is also used for thermal generation of electricity in plants as large as 400 mW capacity. Fuel peat can be converted into a variety of industrial products including charcoal, activated carbon, carbon black, high purity coke, and numerous chemical by-products such as waxes, resins, bitumens, and organic acids.

An Untapped Resource: Nova Scotia has approximately 160 000 hectares (400,000 acres) of peatland, representing some 670 million tonnes (738 million tons) of peat distributed as shown on the adjoining map. The majority of these peatlands are less than 200 hectares (500 acres) in surface area, but there are several much larger deposits in the southern and north-central regions of the province.

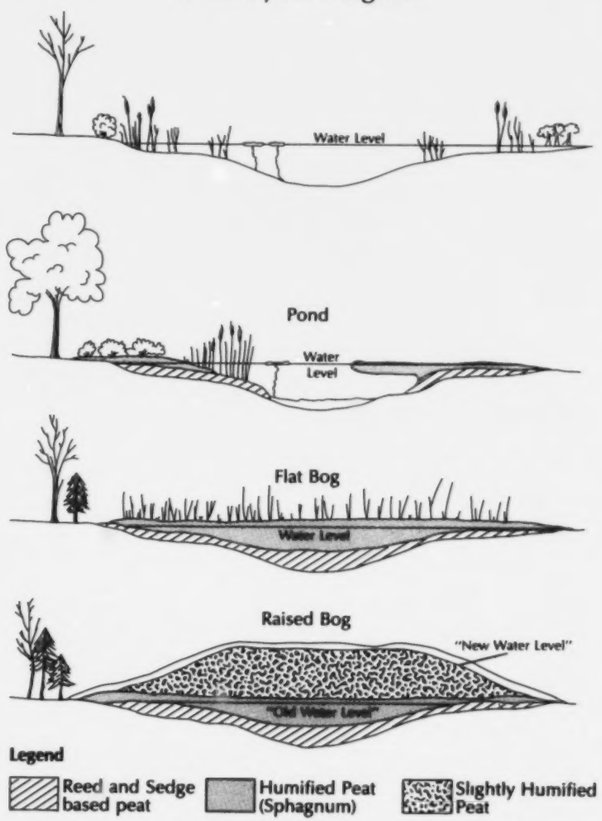
Peatlands may be classified by specialists into various types. However, in cross-section a typical tract of Nova Scotia peatland consists of one or more layers of sedge peat overlain by fuel grade peat, and then by moss grade peat. The layers vary in thickness from one deposit to the next, and one or two of the layers may be entirely absent. In the southern part of the province there are many bogs where thin moss grade layers are underlain by very thick deposits of fuel grade peat, representing substantial energy reserves.

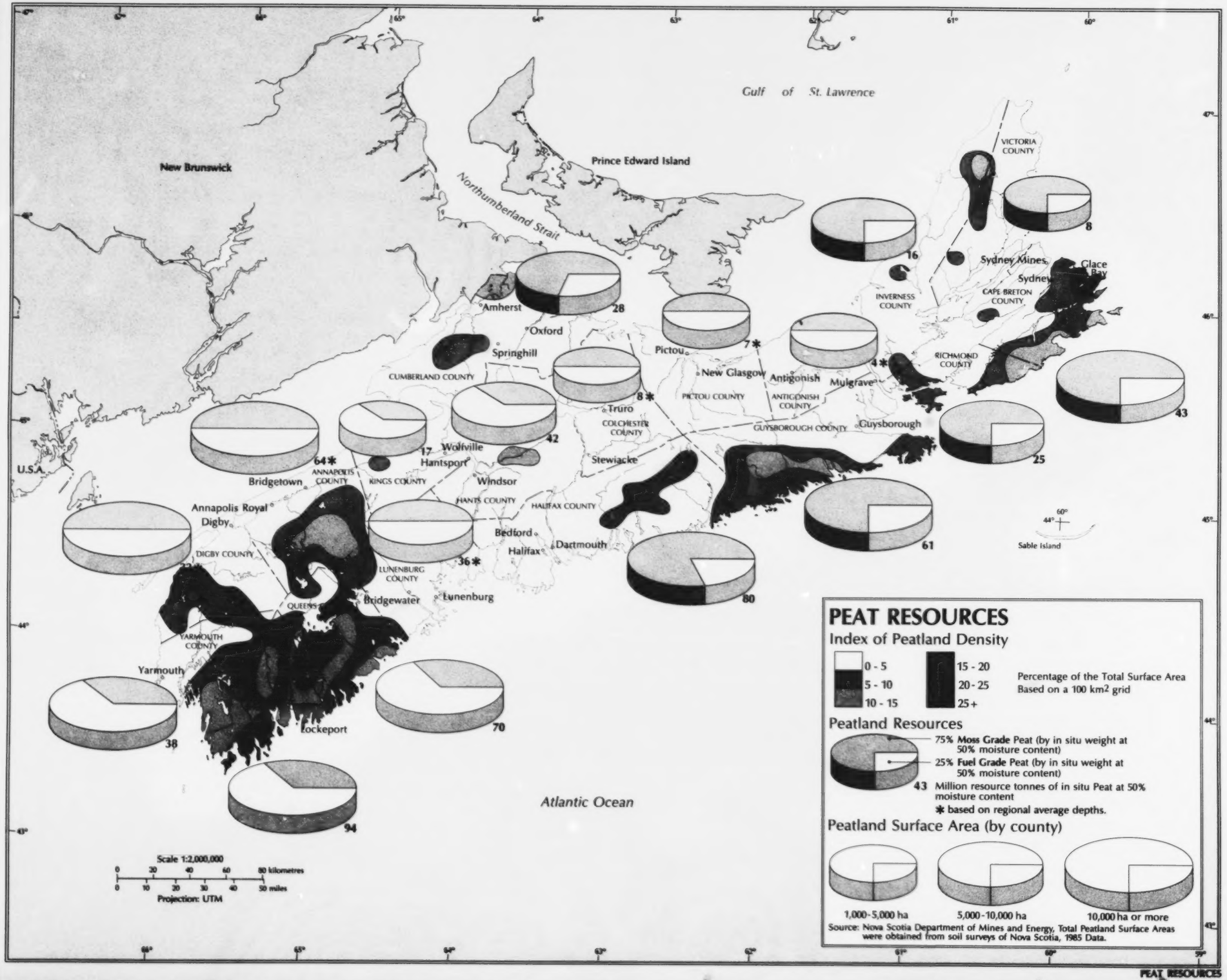
Nova Scotia's peat resources are still virtually untapped. As a fuel, peat could be an environmentally and economically viable product for use in many sectors of the economy.

As a soil conditioner or a raw manufacturing material, the province's peat resources are of extremely high quality, and several deposits are attractively situated near export centres.

The development of enhancement and densification processes to make it easier to handle is making fuel peat more acceptable as an energy source. Innovative mining techniques are leading to increased production capability at lower costs. The potential exists for peat to play an important role in expanding Nova Scotia's industrial employment base and further reducing the province's dependence on imported energy.

Peat Cycle Diagram





PEAT RESOURCES

Metallic Minerals

For over two centuries, exploration and mining for metallic minerals has played a vital role in the economic development of Nova Scotia. Gold, copper, lead, zinc, iron, manganese, tin, antimony, molybdenum, and tungsten are among the metal commodities which have been discovered in the province. The map facing this page gives some sense of how wide-spread and varied are the confirmed and potential deposits in this geologically complex territory. The following notes enlarge upon that condensed information by providing a brief summary of the history of mining for metallic ores in Nova Scotia.

Gold: One of the most spectacular mining developments in the history of Nova Scotia was the gold rush of the 1860's. Although gold had been found earlier, it was in 1858 that the first official discovery of the precious metal occurred in the Mooseland district of Halifax County. Little attention was paid until 1860, however, when a second discovery of gold in quartz veins in the same area was reported. By the spring of 1861 a rush was on at both the Mooseland site and at similar rock structures in nearby Tangier.

In May 1861, Tangier and Mooseland were officially surveyed and proclaimed gold districts — the first of forty such districts to be proclaimed in the province. In less than five years 95 mines were established in the gold districts, and 34 gold mills powered by water or by steam milled and refined the ore they produced. Although the mines were generally small, the annual value of their production was second only to that of coal among Nova Scotia mining activities at the turn of the century. In 1900 a record yield of 962 624 grams (33,955 ounces) was attained. Over a span of eighty years the Goldenville District produced a total of 5 953 500 grams (210,000 ounces) between 1862 and 1942.

During the opening decades of the twentieth century, prospecting interest shifted to the Kondike and the gold fields of northern Quebec and Ontario. As a result there was a gradual decline in gold-mining in Nova Scotia. Although a brief resurgence of activity in the 1930's proved that there were still significant quantities of ore to be mined, rising production costs and the onset of World War II brought gold extraction to a standstill. Some gold and silver were produced at Stirling during the 1950's as by-products from the processing of copper-lead-zinc ore. Since the dramatic increase in the price of gold in the 1970's there has been a revival of exploration for gold in southern Nova Scotia, as well as a re-examination of former producing sites to evaluate the production potential of low-grade ores.

Base Metals (Copper, Lead, Zinc): Native copper was one of the earliest mineral discoveries in Nova Scotia, having been reported in 1604 at Cap d'Or (near present-day Parrsboro) by members of Samuel de Champlain's exploration parties. Discoveries were made during the nineteenth century near Caribou, at Copper Lake in Antigonish County, along the Wallace River, Cumberland County and at Coxheath, Cape Breton County. Mining operations were undertaken on several occasions, but never on a large scale. Nevertheless, significant reserves of copper ore have been defined, and large areas of favourable intrusive rocks have yet to be explored.

Mining of lead and zinc grading 6% occurred at Smithfield during the 1920's, and again in 1951-52. The Stirling copper-lead-zinc property was discovered in 1885, and was mined intermittently by several companies up to the 1950's, at times grading as high as 10% Zn, 2.3% Pb, 1% Cu, as well as gold and silver by-products. Underground drilling in a large barite mine at Walton in 1958 disclosed a sizeable lead-zinc-copper-silver orebody which produced 56 836 tonnes (62,650 tons) of lead-zinc-copper concentrate and 98 537 796 grams (3,475,760 ounces) of silver by the time the mine closed in 1974. Lead-zinc mining was the focus of attention in the Gays River-Musquodoboit Valley area in the 1970's, until low prices and technical difficulties forced closure of the mine in 1981. Similar problems brought work at the Yava lead mine in the Salmon River area of Cape Breton Island to a halt in 1981.

Other Metallic Mineral Occurrences: The facing map indicates several occurrences of other metallic elements in Nova Scotia.

Iron mining was moderately successful in Nova Scotia during the nineteenth century, with almost continuous production from mines at Torbrook in Annapolis County and Londonderry in Colchester County between 1846 and 1906. Thereafter, although the steel industry at Sydney grew in importance, iron mining in the province ceased.

Manganese was mined in the Tennycape area southwest of Truro for about thirty years from 1876, and sporadically at New Ross from 1891 to 1921. Significant quantities of manganese ore remain pending a time when production will become economically feasible.

One of the most recent mining developments in Nova Scotia has been the discovery of a large low grade (0.16%) tin deposit in the East Kemptville area of Yarmouth County. At least 56 000 000 tonnes (61,600,000 tons) of ore have been delineated. This open pit mining operation began production in October of 1985 and will also produce a zinc and copper concentrate.

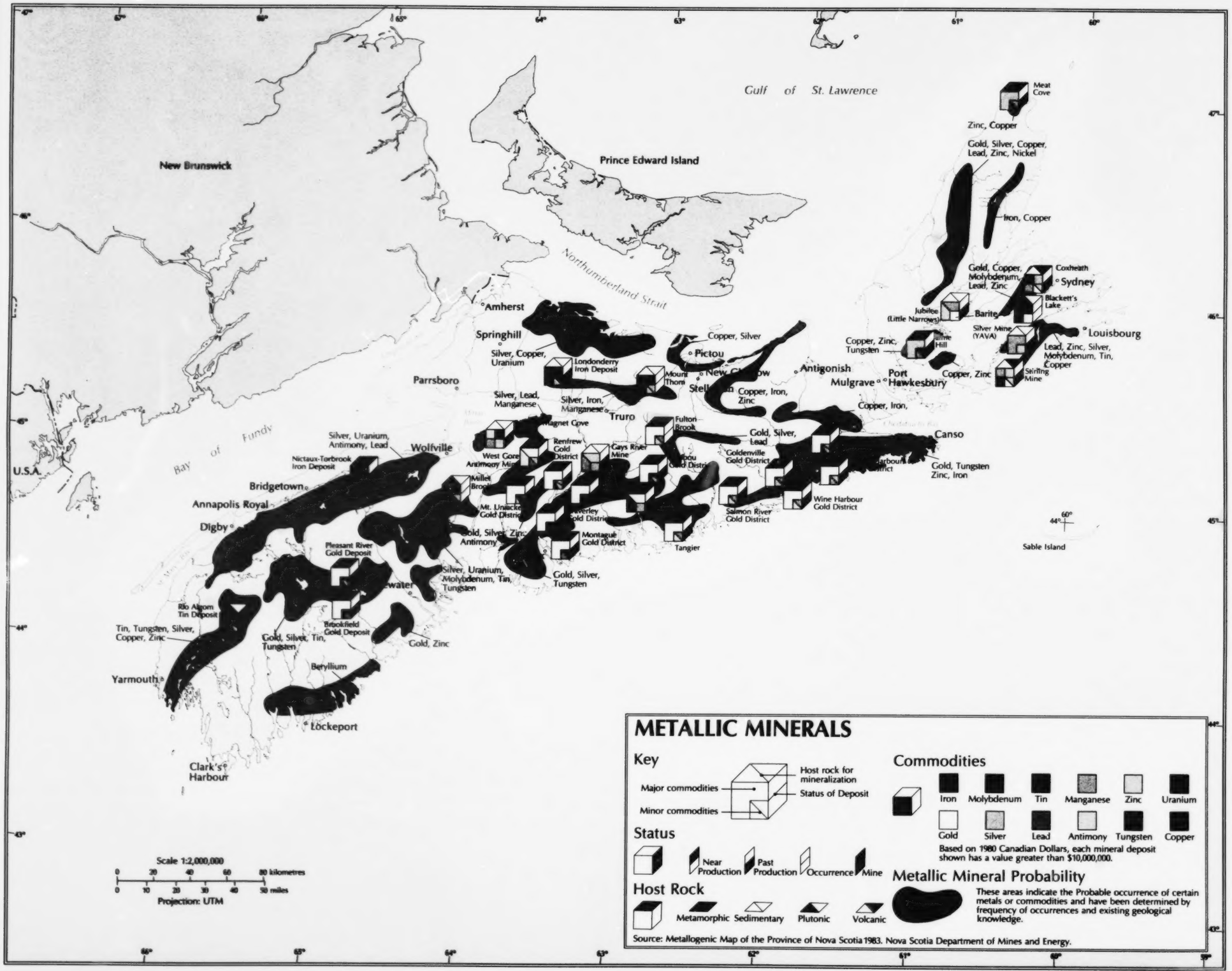
Molybdenite bodies found at New Ross in Lunenburg County and at Coxheath and Gabarus in Cape Breton County have been actively investigated but not yet brought to commercial production.

Stibnite, the chief ore of antimony, was mined intermittently at West Gore, Hants County from 1884 to 1917 and the concentrates shipped to Wales for smelting.

Scheelite, the ore of tungsten has been produced in the province from two properties: at Moose River, and at Indian Path, southwest of Lunenburg.

Metallic Mineral Probability: Large areas of the map on the facing page are identified as territories which promise a high probability of the presence of metallic mineral deposits as determined by existing geological knowledge. They provide a sound base for the optimism with which exploration for a broad range of minerals is currently viewed in Nova Scotia.

The opening of the East Kemptville tin deposit, and renewed interest in gold deposits at Cochrane Hill and Forest Hill all point to a new period of diversification and expansion. Further growth in tin and gold-related mineral development can be expected, and given Nova Scotia's diverse geology there can be little doubt that there are other significant terrains with rich potential still waiting to be discovered.



METALLIC MINERALS

Industrial Minerals

The adjacent map makes it apparent that Nova Scotia is well-supplied with industrial minerals. This term describes a widely varied group of mineral resources which can be divided into two broad categories: non-metallic, industrial minerals, and structural materials.

Structural materials, as the name suggests, are those mineral substances primarily used in the construction trades. They include commodities such as sand and gravel, clay and shale, crushed stone, and building stone.

Non-metallic industrial minerals, on the other hand, are found in an amazingly wide spectrum of other industrial applications, from food preservation to high-temperature ceramics. Minerals of this category which are presently mined in Nova Scotia include anhydrite, barite, dolomite, gypsum, limestone, salt, silica sand and peat moss.

Geological Origins: Geologically, most of the industrial mineral mining in Nova Scotia occurs in rocks of the Early Carboniferous, Windsor Group (about 310-345 million years old — see Geological Map). This Group is mined for gypsum, anhydrite, salt, limestone, dolomite, and shale. Shale used in the manufacture of brick is also quarried from Late Carboniferous deposits.

Much older rocks, including the Pre-Cambrian George River Group (over 600 million years old), supply dolomite and marble. Cambrian and Devonian quartzites (500-600 million years) and granitic rocks are the source of all the province's quarried aggregates. Building stone is quarried in western Nova Scotia from Devonian Age (345-405 million years) granite.

Barite is mined from both Early Carboniferous, Horton Group sedimentary rocks in Colchester County, and from somewhat older Devono-Carboniferous rocks at Scotsville, Inverness County. Early Cretaceous (125-135 million yrs.) deposits in central mainland Nova Scotia supply clay for brick manufacture and white silica sand for use as industrial sand. Pleistocene deposits laid down as a result of glaciation in the past million years supply all the sand and gravel used in the province, and most of the clay used for brick.

Aggregates: An annual aggregate production of over 11 million tonnes (12 million tons) is produced, in part from widely distributed deposits of sand and gravel linked to glacial activity, and in part from crushed bedrock. This latter source will become increasingly important as readily accessible, high quality sand and gravel deposits gradually become depleted.

Barite: An unusually heavy mineral, barite (barium sulfate or $BaSO_4$) in its chemically pure form is used pharmaceutically in the taking of stomach and intestinal X-rays. The principal industrial use of barite is as a weighting agent added to the lubricating mud used in oil-well drilling to help prevent "blowouts" caused by pressures encountered in oil- or gas-bearing formations. As exploration of Nova Scotia's offshore petroleum resources continues, there will be a continuing demand for barite for this purpose.

Clay and Shale: Apart from small quantities used by potters, virtually all clay and shale mined in Nova Scotia is used to manufacture building brick. Forty to fifty thousand tonnes of clay and shale are extracted annually from clay pits in Hants County and shale quarries in Hants and Pictou Counties to meet the needs of a major brickyard in Lantz.

Dolomite: This mineral is a naturally occurring calcium-magnesium carbonate or $CaMg(CO_3)_2$, often found in association with limestone. In 1984 a new dolomite quarry was opened at a deposit in Victoria County, to produce the mineral for use as a flux in steel manufacture.

Gypsum and Anhydrite: With large deposits of gypsum and anhydrite occurring in central and eastern Nova Scotia, the province ranks among the leading gypsum mining and exporting regions in the world. In 1984 Nova Scotia produced a record 6.7 million tonnes (7.4 million tons) of these minerals. Most of the gypsum is shipped to wallboard plants in the United States, but some is used to manufacture a variety of plaster of Paris products, and as a concrete set controlling agent in Portland cement. Anhydrite is also used in cement manufacture, and as a soil conditioning agent.

Limestone: Most of the 830 000 tonnes (915,000 tons) of limestone, or calcium carbonate, quarried in Nova Scotia in 1984 came from Colchester County and was manufactured into Portland cement. About 138 000 tonnes (152, 000 tons) were quarried in Halifax County for agricultural purposes as a neutralizing agent for acidic soils. Lesser quantities were extracted at Irish Cove for use in the steel and paper industries.

Salt: Salt reserves in Nova Scotia far exceed the currently available market for their potential production. At present there are two active salt mines in the province, both in Cumberland County. One, at Pugwash, is an underground mine producing rock salt for winter highway snow and ice control as well as some high purity evaporated salt. The entire production of the other operation, at Nappan, is high purity brine well evaporated salt for the food, chemical, and agricultural industries.

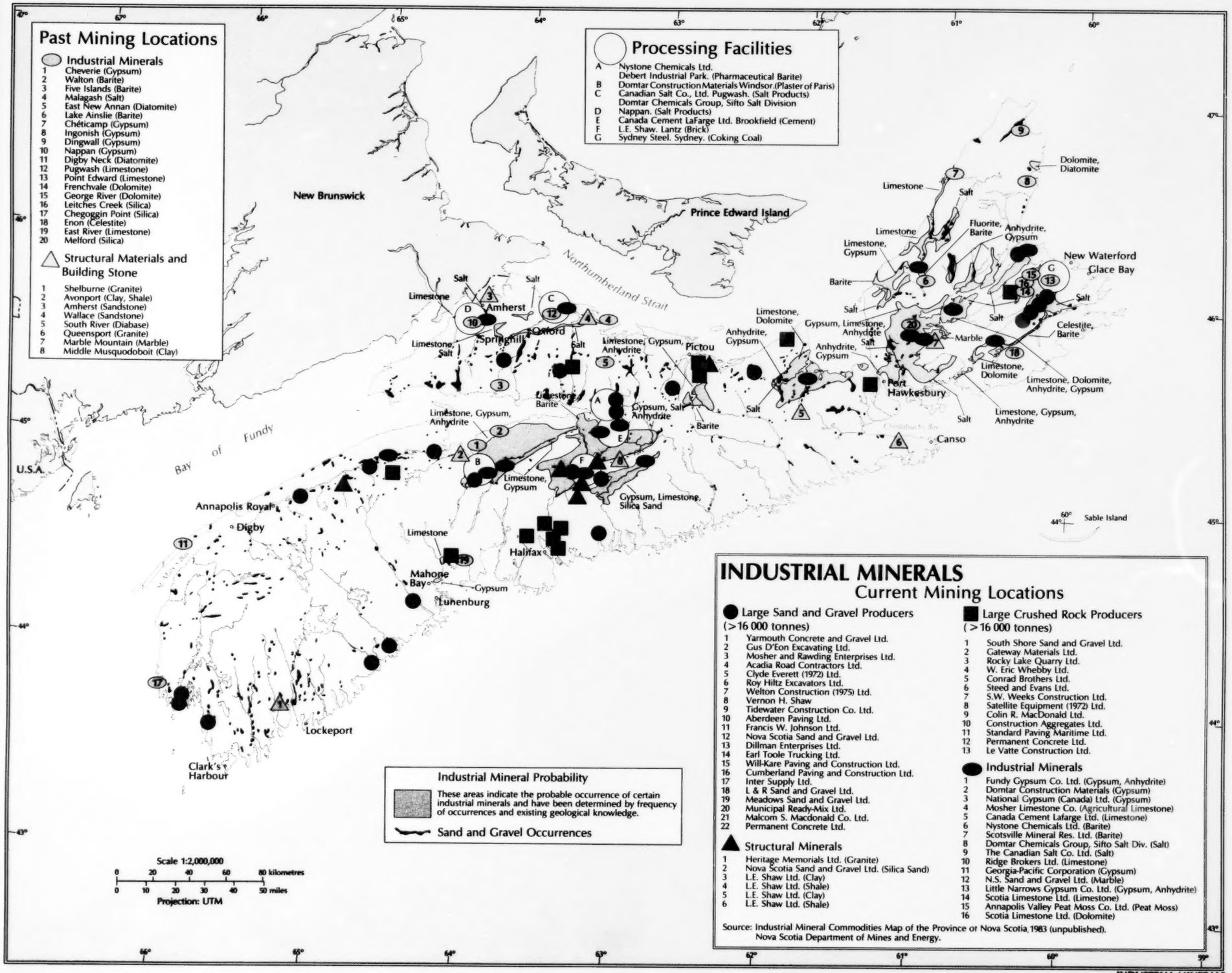
Silica Sand: Most of the production from silica sand deposits in central Nova Scotia is marketed as industrial sand. However, it is of high enough quality to be used in the manufacture of glass containers and fibreglass insulation.

Building Stone: Granite, sandstone, slate, quartzite and marble quarries in Nova Scotia have produced building stone for local and export markets in past years. At present three types are being produced in the province: small marble pieces in Inverness County, grey granite in Annapolis County, and sandstone in Cumberland County.

Peat: (see Peat Resources Map and text).

Future Prospects: Nova Scotia has been mining and exporting industrial minerals for over two hundred years. In 1984, excluding aggregate production, there were nineteen companies operating at twenty-six sites producing ten different commodities. Numerous aggregate producers supply sufficient sand, gravel, and crushed stone to satisfy all the provincial requirements as well as serving growing export markets in eastern Canada and the southern United States. Production value of all industrial minerals in 1984 was over $135,000,000. This value has been rising over the past several years, and in view of the generally expanding prospects of the North American economy it is anticipated that the total annual production value will continue to increase in the foreseeable future.

Nova Scotia has large untapped reserves of aggregate materials, gypsum and anhydrite, limestone, dolomite, barite, fluorite, peat moss, and salt, as well as other known deposits of building stone, celestite, diatomite, silica sand, and refracting clays. There are also occurrences of wollastonite, brucite, spodumene, and talc. Interest is growing in many of these, and all indications are that Nova Scotia will be producing and processing more and more industrial mineral commodities in years to come.



INDUSTRIAL MINERALS

Current Mining Locations

Large Sand and Gravel Producers (>16 000 tonnes)

1 Yarmouth Concrete and Gravel Ltd.
2 Gus D'Eon Excavating Ltd.
3 Mosher and Rawding Enterprises Ltd.
4 Acadia Road Contractors Ltd.
5 Clyde Everett (1972) Ltd.
6 Roy Hiltz Excavators Ltd.
7 Welton Construction (1975) Ltd.
8 Vernon H. Shaw
9 Tidewater Construction Co. Ltd.
10 Aberdeen Paving Ltd.
11 Francis W. Johnson Ltd.
12 Nova Scotia Sand and Gravel Ltd.
13 Dillman Enterprises Ltd.
14 Earl Toole Trucking Ltd.
15 Will-Kare Paving and Construction Ltd.
16 Cumberland Paving and Construction Ltd.
17 Inter Supply Ltd.
18 L & R Sand and Gravel Ltd.
19 Meadows Sand and Gravel Ltd.
20 Municipal Ready-Mix Ltd.
21 Malcom S. Macdonald Co. Ltd.
22 Permanent Concrete Ltd.

Structural Minerals

1 Heritage Memorials Ltd. (Granite)
2 Nova Scotia Sand and Gravel Ltd. (Silica Sand)
3 L.E. Shaw Ltd. (Clay)
4 L.E. Shaw Ltd. (Shale)
5 L.E. Shaw Ltd. (Clay)
6 L.E. Shaw Ltd. (Shale)

Large Crushed Rock Producers (>16 000 tonnes)

1 South Shore Sand and Gravel Ltd.
2 Gateway Materials Ltd.
3 Rocky Lake Quarry Ltd.
4 W. Eric Whebby Ltd.
5 Conrad Brothers Ltd.
6 Steed and Evans Ltd.
7 S.W. Weeks Construction Ltd.
8 Satellite Equipment (1972) Ltd.
9 Colin R. MacDonald Ltd.
10 Construction Aggregates Ltd.
11 Standard Paving Maritime Ltd.
12 Permanent Concrete Ltd.
13 Le Vatte Construction Ltd.

Industrial Minerals

1 Fundy Gypsum Co. Ltd. (Gypsum, Anhydrite)
2 Domtar Construction Materials (Gypsum)
3 National Gypsum (Canada) Ltd. (Gypsum)
4 Mosher Limestone Co. (Agricultural Limestone)
5 Canada Cement Lafarge Ltd. (Limestone)
6 Nystone Chemicals Ltd. (Barite)
7 Scotsville Mineral Res. Ltd. (Barite)
8 Domtar Chemicals Group, Sifto Salt Div. (Salt)
9 The Canadian Salt Co. Ltd. (Salt)
10 Ridge Brokers Ltd. (Limestone)
11 Georgia-Pacific Corporation (Gypsum)
12 N.S. Sand and Gravel Ltd. (Marble)
13 Little Narrows Gypsum Co. Ltd. (Gypsum, Anhydrite)
14 Scotia Limestone Ltd. (Limestone)
15 Annapolis Valley Peat Moss Co. Ltd. (Peat Moss)
16 Scotia Limestone Ltd. (Dolomite)

Source: Industrial Mineral Commodities Map of the Province of Nova Scotia 1983 (unpublished). Nova Scotia Department of Mines and Energy.

Petroleum

From the late 1960's to the early and mid-1970's a world-wide crisis in the international crude oil market provided the impetus for oil and gas exploration to be undertaken in Nova Scotia on an unprecedented scale.

Offshore Petroleum Resources: Offshore petroleum exploration in Nova Scotia began with the spudding of the first well, Sable Island C-67, by Mobil Oil on Sable Island in 1967, although geophysical studies had been conducted as early as 1959. Since then, over 100 wells have been drilled, with the first discovery being Shell's first well on the Scotian Shelf, Onondaga E-84, in 1969. In 1979, the Venture discovery was made by Mobil to the east of Sable Island with the Venture D-23 discovery well.

Currently there are about 9 million hectares (22 million acres) of Nova Scotia's offshore region that have been licensed for oil and gas exploration. As knowledge of the geology of the Scotian Shelf has increased, the ratio of successful wells to total wells drilled has risen dramatically. Of the last 26 wildcat wells drilled offshore, 9 have resulted in significant gas discoveries, thus yielding a 35% success rate.

The areas of greatest interest for oil and gas exploration are the Scotian Shelf and Slope which are underlain by thick accumulations of sedimentary rocks. The Scotian Shelf is one of Canada's largest sedimentary basins. Covering approximately 16 million hectares (40 million acres), it stretches for about 700 kilometres (435 miles) from George's Basin in the west to the Laurentian Channel in the east, varying in width from 122 to 228 kilometres (76 to 142 miles).

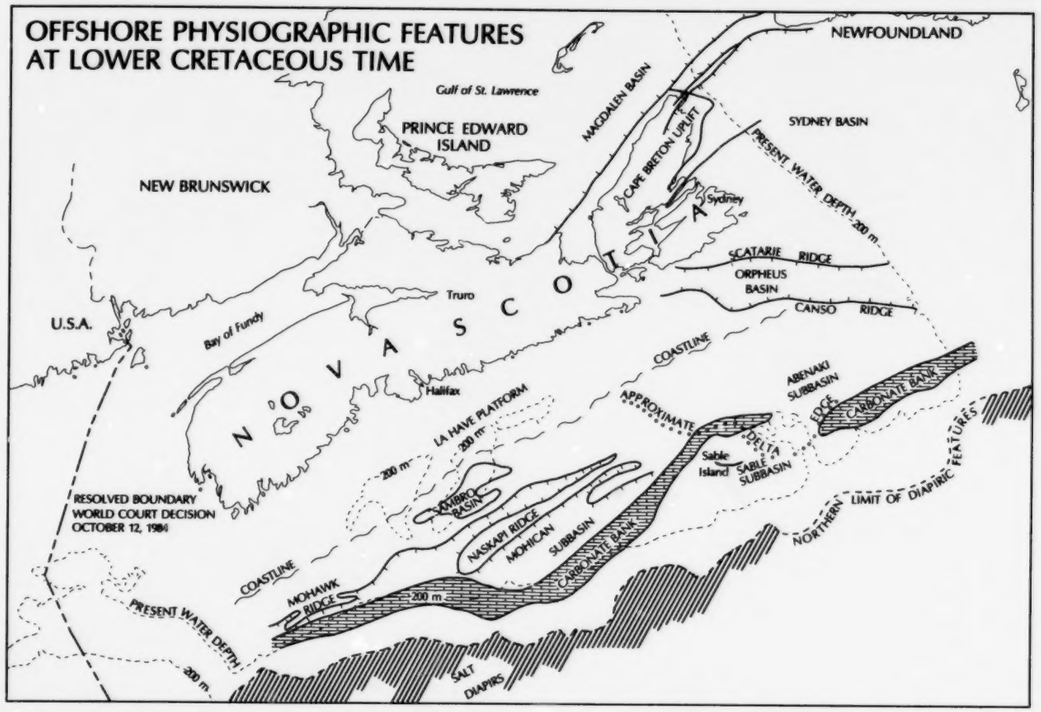
Sediments capable of producing hydrocarbons are found throughout the Scotian Shelf. The thickest sediments were deposited in the Sable Island and Abenaki sub-basins, and it is here that the majority of oil and gas discoveries, including Venture, are located.

Formations that occurred in the Jurassic and Cretaceous periods (210 to 63 million years ago) are keys to the hydrocarbon potential of the Scotian Shelf. The creation of offshore Nova Scotia hydrocarbon reservoirs coincided with the formation of ancient deltas and their associated sandstone deposits, and carbonate deposits in the form of banks and reefs. Natural gas is the predominant hydrocarbon discovered on the Scotian Shelf so far, with significant amounts of associated condensate providing the basis for other marketable products.

At the time of writing, the companies participating in the Venture Project were well advanced in their planning for the development of what is expected to be Nova Scotia's first producing offshore natural gas field. The offshore production facilities required to produce natural gas from the shallow waters off Sable Island will be similar to those used in the southern North Sea. The projected cost of $2.5 billion (1984) includes development wells, offshore production facilities, pipeline infrastructure, and the gas plant itself. Construction of the transmission and distribution system will result in the investment of more than 400 million dollars over and above the cost of the Venture Project itself, making significant contribution to employment and industrial capacity in Nova Scotia over the coming years.

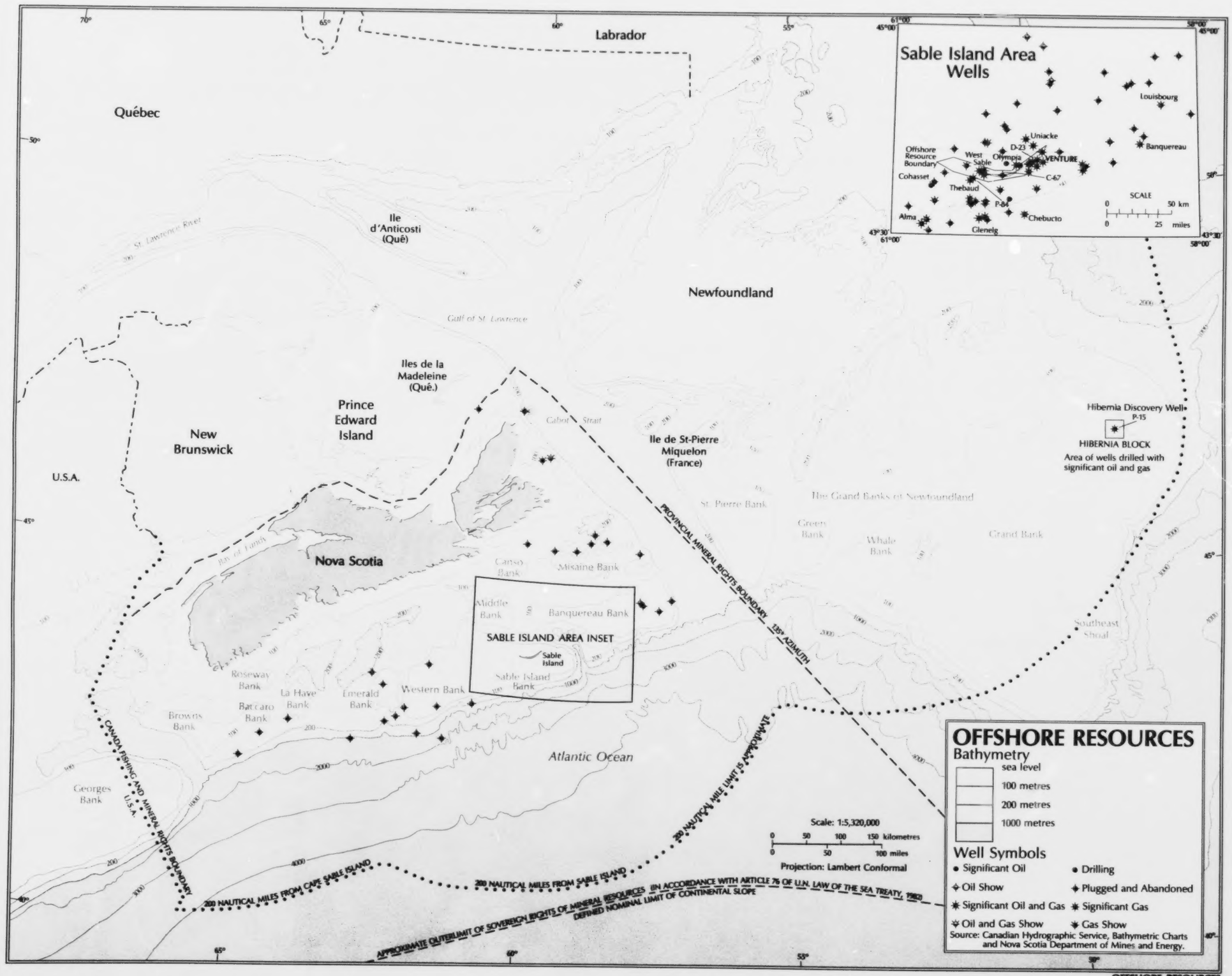
Onshore Petroleum Resources: The onshore search for petroleum has concentrated primarily on the Carboniferous age rocks which are found in several sedimentary sub-basins in Nova Scotia. (See maps and notes on Geology — General, and Coal in this section). A commercial oil and gas field in the neighbouring province of New Brunswick has been producing for many years from a rock formation of Carboniferous age which extends through much of Nova Scotia. Exploration activities have been prompted by widely scattered occurences of hydrocarbon traces since the 1880's.

Since the first recorded drilling began in 1869, 97 wells have been drilled for petroleum in Nova Scotia's onshore lands. A number of these have reported occurrences of oil, gas, or both, but no commercial discoveries have been made to date. These wells have been generally situated in the northern section of the province. In addition, a number of wells drilled for other purposes have intersected traces of petroleum.



Petroleum exploration licences in 1984 covered about 2.8 million hectares (6.9 million acres), representing about one-half of the land mass of Nova Scotia.

Research into a related venture, coal bed demethanization, is currently being conducted in Pictou County and on Cape Breton Island. Methane production from these projects is being monitored closely in order to substantiate the economics of production.



OFFSHORE RESOURCES

Nova Scotia's resource-based industries are distributed widely throughout the small towns and rural areas of the province. Nevertheless, one-third of the total population lives in Halifax County, and metropolitan Halifax is the largest urban centre in Atlantic Canada. As the provincial capital, it is the seat of government, as well as the principal centre for a whole range of services required by a modern economy, from transportation and distribution to health care, education, culture and recreation.

Infrastructure

Nova Scotia Water Resources

Water is a necessity for every human activity. Ensuring the continued quality and availability of fresh water resources for consumption and use must therefore be a primary objective of any government. In Nova Scotia, this responsibility is vested in the Department of the Environment under the authority of the Environmental Protection Act, the Water Act, and the Well Drilling Act.

Fortunately, Nova Scotia is richly endowed with fresh water. Lakes, rivers, ponds and streams cover approximately 5% of the area of the province and form the surface water component of its water resources. In addition, there is the groundwater component found beneath the surface in soils and bedrock aquifers, or water bearing zones.

The adjacent map illustrates a number of key aspects and activities concerning the management of the water resources of Nova Scotia.

The province is traversed by a multitude of water courses of all sizes which provide drainage from the interior to the sea. In all, forty-six primary drainage areas have been identified for management and monitoring purposes. These, in turn, have been subdivided into numerous secondary and tertiary areas. On a map of this scale, only the major river systems can be shown.

Monitoring Sites:
Both surface and groundwater resources are closely monitored. In the case of surface water, in fact, stream flow data have been collected in Nova Scotia, under co-operative Federal-Provincial agreements, since 1915. The most recent such agreement came into effect in 1975.

Information has been collected from over 100 sites, 53 of which are now in use for streamflow water quantity analyses. Of these, 20 are also used for quality sampling and 3 for sediment sampling. Records for these sites are maintained by the Inland Waters Directorate of Environment Canada.

Groundwater levels have been recorded at the locations shown, since as early as 1965, to establish normal and extreme ranges of fluctuation. These sites are also used to monitor water quality and influences such as surface water, precipitation, and tidal effects.

Groundwater Regions: The delineation of groundwater regions is dictated by the bedrock in which lie the aquifers, or water bearing zones. Knowledge of the bedrock is important for understanding potential pumping rates, water quality, and the monitoring and control of pollutants. Although geological maps can provide general indications of the groundwater resource in a region, specific site examinations are essential in order to obtain detailed information for any given location.

Water Resource Evaluations:
As has been indicated, the monitoring of Nova Scotia's water resources is an ongoing process. To date, regional water resource evaluations have been completed for the twelve evaluation areas shown on Figure A. Chosen for analysis because of its particular demands and peculiarities, each evaluation area has been the subject of a quantitative and qualitative study of both its surface and groundwater resources.

Community Water Supply Systems:
Although the scale does not permit every central water supply system in the province to be shown on the accompanying map, there are presently 79 of them in operation. The water quality of these systems is monitored regularly, and is required to meet standards set by the Nova Scotia Department of Health.

Twenty of these central systems rely, at least partially, on groundwater as their source of supply. Surface water provides the remainder with their requirements, while residents outside the areas served by such systems depend, for the most part, on individual, drilled wells for their water supply.

1 Southwestern Nova Scotia, (1982) R.J. Porter
2 Western Annapolis Valley, (1968) P.C. Trescott
3 Annapolis-Cornwallis Valley, (1968) P.C. Trescott
4 Windsor-Hantsport-Walton Area, (1969) P.C. Trescott
5 Cumberland County, (1980) J.G. Vaughan and G.H. Somers
6 Truro Area, (1972) T.W. Hennigar
7 Shubenacadie-Stewiacke River Basin, (1981) Technical Reports No. 1- No. 26, Shubenacadie Stewiacke River Basin Board.
8 Musquodoboit River Valley, (1970) C.L. Lin
9 Pictou County, (1980) J.G. Gibb and K. McMullin
10 Strait of Canso, (1975) Environment Committee
11 Sydney Coal Field, Cape Breton County (Work in progress), F.E. Baechler
12 Sable Island, (1976) T.W. Hennigar

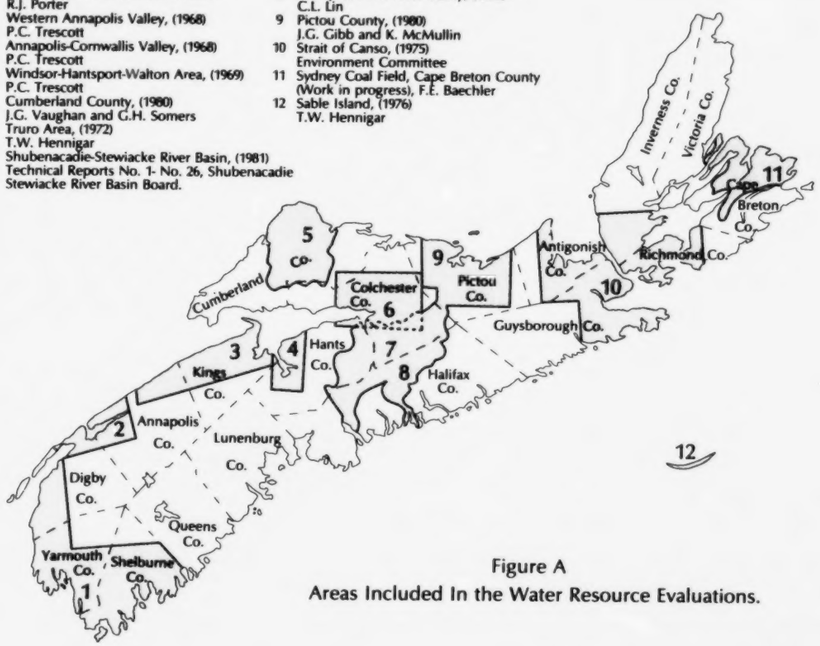


Figure A
Areas Included In the Water Resource Evaluations.

Lakes and rivers used by municipalities or industries as water supplies, including all or part of their watersheds, may be designated as Protected Water Supply Areas. The designation order may be used in addition to municipal zoning by-laws, or land acquisition and control by the owner of the water works, as a means of protecting the source of the water supply. Any activities which might impair the quality of water in an area which has been so designated may be prohibited or regulated.

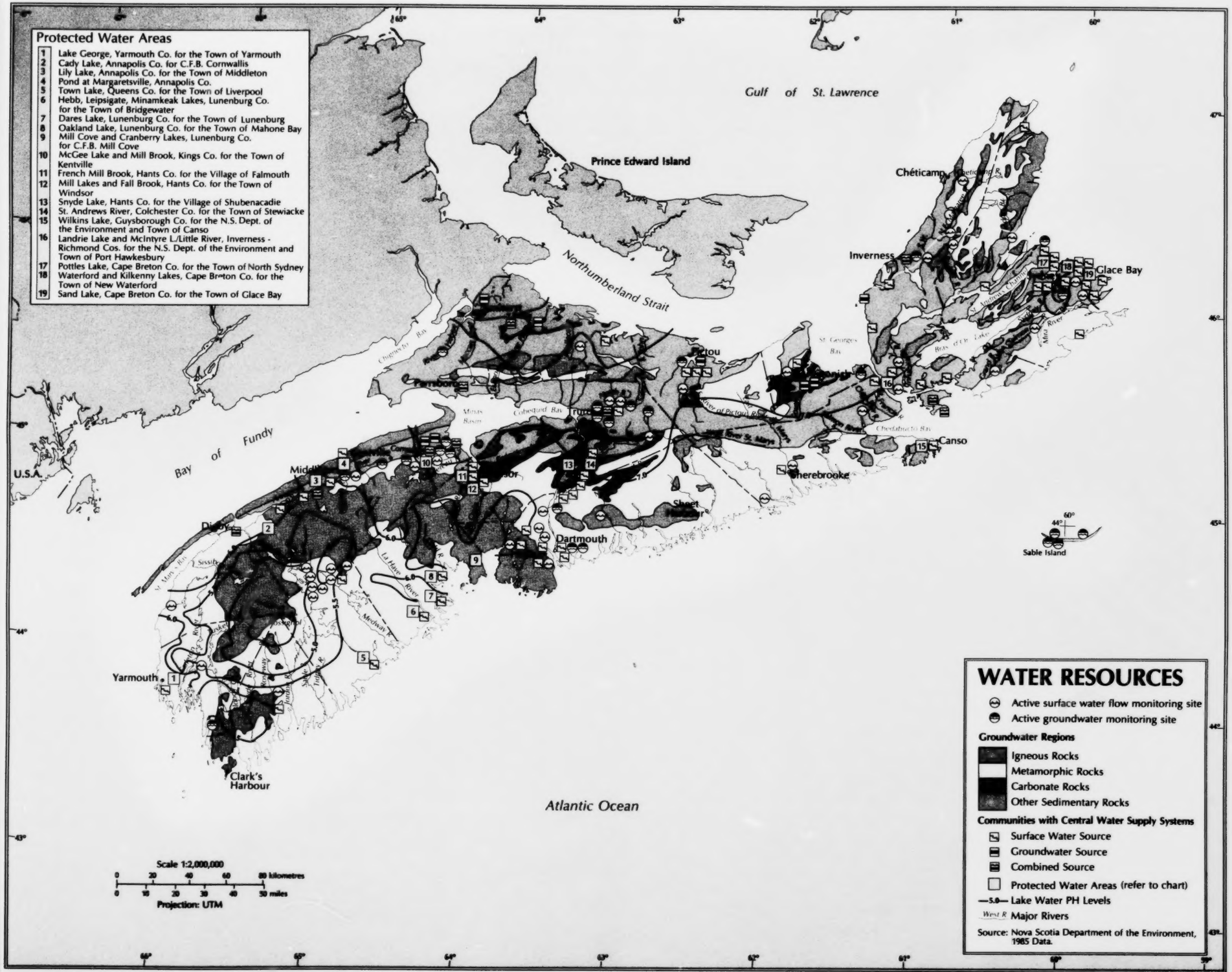
Regulations in force in the designated watersheds marked on the map can vary greatly. They may range from direct prohibition of recreational use of the area waters for purposes like swimming, fishing, boating and snowmobiling, to control of industrial activities such as forestry and mining operations on lands within the watershed.

Acidity in Lake Water:
In recent years, there has been concern across eastern North America about evidence of increasing acidity in many natural bodies of water. Information from a variety of sources has been used to compile the lines (isopleths) on this map which indicate the acidity of Nova Scotian lakes.

Acidity is expressed in terms of pH. A pH reading of 7.0 represents a neutral state, neither acid nor alkaline, while lower numbers indicate greater acidity. Thus it can be seen that the most acidic waters in Nova Scotia are found in the southwestern interior, where pH levels as low as 4.5 are reported. In contrast, the lakes on the north-central region were found to be at or near the neutral point.

Although data were sparse for several parts of the province, the outlines or isopleths indicating regional variations in pH do bear some resemblance to the borders of calcareous/non-calcareous (limestone/non-limestone) bedrock zones. The most acidic waters were found in areas where granites and quartzites are widespread. These rocks are resistant to weathering and release dissolved minerals very slowly. Humified (decomposed) organic materials such as peat moss can also contribute to acid conditions. However, there is evidence of recent acidification in some rural lakes that are not known to be influenced by sources of natural acidity. In this regard, it has been noted that the atmospheric deposition of acids — the so-called "acid rain" phenomenon — is most intense in southwestern Nova Scotia.

Ongoing international research projects are seeking to establish more precisely the causes and effects of acidification. In the mean time, the acidity of water need not be a deterrent to its use, since it can be treated to suit the requirement for which it is to be used.


Protected Water Areas
1 Lake George, Yarmouth Co. for the Town of Yarmouth
2 Cady Lake, Annapolis Co. for C.F.B. Cornwallis
3 Lily Lake, Annapolis Co. for the Town of Middleton
4 Pond at Margaretsville, Annapolis Co.
5 Town Lake, Queens Co. for the Town of Liverpool
6 Hebb, Leipsigate, Minamkeak Lakes, Lunenburg Co. for the Town of Bridgewater
7 Dares Lake, Lunenburg Co. for the Town of Lunenburg
8 Oakland Lake, Lunenburg Co. for the Town of Mahone Bay
9 Mill Cove and Cranberry Lakes, Lunenburg Co. for C.F.B. Mill Cove
10 McGee Lake and Mill Brook, Kings Co. for the Town of Kentville
11 French Mill Brook, Hants Co. for the Village of Falmouth
12 Mill Lakes and Fall Brook, Hants Co. for the Town of Windsor
13 Snyde Lake, Hants Co. for the Village of Shubenacadie
14 St. Andrews River, Colchester Co. for the Town of Stewiacke
15 Wilkins Lake, Guysborough Co. for the N.S. Dept. of the Environment and Town of Canso
16 Landrie Lake and McIntyre L./Little River, Inverness - Richmond Cos. for the N.S. Dept. of the Environment and Town of Port Hawkesbury
17 Pottles Lake, Cape Breton Co. for the Town of North Sydney
18 Waterford and Kilkenny Lakes, Cape Breton Co. for the Town of New Waterford
19 Sand Lake, Cape Breton Co. for the Town of Glace Bay
Gulf of St. Lawrence
Prince Edward Island
Northumberland Strait
Bay of Fundy
U.S.A.
Atlantic Ocean
Yarmouth
Digby
Middleton
Pictou
Parrsboro
Truro
Dartmouth
Sherbrooke
Canso
Inverness
Glace Bay
Chéticamp
Sable Island
Clark's Harbour
Scale 1:2,000,000
0 20 40 60 80 kilometres
0 10 20 30 40 50 miles
Projection: UTM
WATER RESOURCES
Active surface water flow monitoring site
Active groundwater monitoring site
Groundwater Regions
Igneous Rocks
Metamorphic Rocks
Carbonate Rocks
Other Sedimentary Rocks
Communities with Central Water Supply Systems
Surface Water Source
Groundwater Source
Combined Source
Protected Water Areas (refer to chart)
5.0 Lake Water PH Levels
West R Major Rivers
Source: Nova Scotia Department of the Environment, 1985 Data.

WATER RESOURCES

Nova Scotia Transportation

Since the earliest stages of human history, the goal of progress in transportation has been to develop methods of moving people and goods at a greater speed and/or at a lower cost. Some modes of transportation may be slow, but cheap; other mays be fast, but more costly. In a modern economy, such as that of Nova Scotia, a whole array of transportation alternatives must be present, to enable each sector to use the ones which are most appropriate to its needs.

Water:
Being a coastal province, Nova Scotia has always enjoyed the benefits of numerous sheltered ports an harbours. During the eighteenth and nineteenth centuries these havens were of vital importance to the development of a resource-based trading economy.

Today, many of those same ports are of crucial importance to industries as diverse as tourism and fisheries. The thirteen designated "local ports" shown on the adjacent map have adequate facilities to support the local fishing activity and to handle commercial traffic. The seven "regional ports" have facilities to handle significant levels of commercial activity, and are recognized as important regional growth centres.

The Port of Halifax, designated as a "port corporation", dominates marine activity in the province. Facilities at the ice-free harbour include 32 deep-water berths, four container berths, two auto-terminal berths, facilities to handle offshore vessels, and other appropriate infrastructure to complement a world-class port.

Nova Scotia is accessible by water via car and passenger ferry services from the continental United States (Portland and Bar Harbour, Me., to Yarmouth, N.S.), from New Brunswick (Saint John, N.B. to Digby, N.S.), from Prince Edward Island (Wood Islands, P.E.I. to Caribou, N.S.), and from Newfoundland, (Port-aux-Basque and Argentia, Nfld. to North Sydney, N.S.).

Rail:
For bulk transportation and distribution of goods, rail transportation is often the shipper's most cost-effective choice. There are over 1100 km (700 mi.) of track in Nova Scotia over which trains operate regularly. Canadian National Railways offers freight services on a regular basis on some 800 km (500 mi.) of this system. Daily, scheduled services run from Halifax to Truro and Moncton, from Truro to Sydney, and from North Sydney to Newfoundland via CN Marine ferry. Trains travel three times a week from Halifax to Bridgewater, and on a "demand" basis between Bridgewater and Liverpool.

The Dominion Atlantic Railway runs a freight service between Halifax and Kentville three times weekly, and between Kentville and Yarmouth on demand. The Cape Breton Development Corporation operates an industrial spur line in the industrial Cape Breton district for the movement of coal.

VIA Rail Canada provides intercity rail passenger service in Nova Scotia. Diesel rail cars travel daily on the following runs: Halifax-Yarmouth; Halifax-Truro-Port Hawkesbury; Halifax-Truro-Sydney; and Halifax-Truro-Moncton-Saint John. A full service train, the Atlantic Transcontinental, operates on a daily basis between Halifax and Montreal, connecting there with lines to Toronto and western Canada.

Air:
Commercial air services are available at Halifax International Airport, and also at Sydney and Yarmouth. In addition, there is a provincially owned and operated airport at Debert, and six municipally owned local airports at Digby, Liverpool, Waterville, Trenton, Port Hawkesbury, and Margaree. As well, the Department of National Defence has military airports at Greenwood and Shearwater.

Halifax International, which ranks eighth among Canadian airports in numbers of arriving and departing passengers, is served by Air Canada, CP Air, Eastern Provincial Airways, and Air Maritime. There are daily scheduled flights to and from all major centres within the Atlantic Provinces, as well as Montreal, Ottawa, and Toronto, with connections and/or through service to western Canada and the United States. Also there is regular scheduled service from Halifax to Boston, New York, and London.

Sydney Airport, served by Air Canada, EPA and Air Maritime, and Yarmouth Airport, served by Air Canada, provide regional service, with national and international connections through Halifax.

Road:
Administration of public highways in Nova Scotia is a provincial government function, performed by the Department of Transportation. Its responsibilities include the construction and maintenance of Nova Scotia's more than 25,500 km (15,850 mi.) of roads and several local ferry operations.

The Department classifies its roads according to the standard definitions recognized by all highway agencies across Canada. The four principal categories are as follows:

Freeway: A multi-lane, divided highway designed to carry large volumes of traffic at high speeds under free-flow conditions. There is full control of access on a freeway, with access at interchanges only. Freeways provide service within urban areas and also connect major centres and areas of major economic importance within the province or to adjacent provinces or states.

Arterial: A highway, two-lane or multi-lane, usually with limited access, designed to carry significant volumes of traffic at high speeds within urban areas or between major economic areas and points of entry.

Collector: Highways which give equal importance to traffic and land service functions are referred to as collectors. They form an integrated network throughout developed areas, and provide road access to resource and resort areas, industrial centres, smaller towns and villages. Generally they collect traffic from local roads and feed it to arterials and freeways, or vice versa. Access may be regulated.

Local: Highways that have land access as their primary function. Access points may be frequent, both to adjacent land and at street intersections. Generally, traffic volumes are significantly lower than for other classifications.

Further information on Nova Scotia's highway system and the permanent and seasonal regulations governing it may be obtained from Department of Transportation Regional and Division Offices or by writing to:

Motor Vehicle Inspection Division
P.O. Box 156
Halifax, Nova Scotia B3J 2Z3

FERRIES

INTERPROVINCIAL

Digby from Saint John, N.B.
CN Marine
Year round
72 kms., 2 1/2 hrs.
650 passengers
159 vehicles

Caribou from Wood Islands, P.E.I.
Northumberland Ferries Ltd.
May 1st - Dec. 15th
22 kms., 1 1/4 hrs.
325 passengers
60 vehicles

North Sydney from Port-aux-Basques, Nfld.
CN Marine
Year round
160 kms., 6 hrs.
650 passengers
250 vehicles

North Sydney from Argentia, Nfld.
CN Marine
June 15th - Sept. 15th
426 kms., 18 hrs.
525 passengers
135 vehicles

INTERNATIONAL

Yarmouth from Bar Harbor, Me.
CN Marine
Year round
160 kms., 6 hrs.
1000 passengers
250 vehicles

Yarmouth from Portland, Me.
Prince of Fundy Cruise Ltd.
May 1st - Oct. 31st.
320 kms., 11 hrs.
1500 passengers
250 vehicles

AIRPORTS

Airport Location	Runway Number	Runway Size	Runway Surface
Halifax	06-24	2682m x 61m	Asphalt/Concrete
	15-33	2347m x 61m	Asphalt
Shearwater	11-29	2743m x 61m	Asphalt
	16-34	1735m x 61m	Asphalt
Greenwood	08-26	2438m x 61m	Asphalt
	13-31	2438m x 61m	Asphalt
	01-19	1219m x 46m	Asphalt
Sydney	01-19	1829m x 61m	Asphalt
	07-25	2155m x 61m	Asphalt
	14-32	1097m x 61m	Gravel/Asphalt
Yarmouth	06-24	1829m x 46m	Asphalt
	15-33	1524m x 46m	Asphalt
Debert	10-28	1524m x 46m	Asphalt
	16-34	1524m x 46m	Asphalt
	05-23 (closed)	1524m x 46m	Broken Asphalt
Digby	06-24	914m x 23m	Asphalt
Liverpool	07-25	914m x 23m	Asphalt
Waterville	10-28	914m x 23m	Asphalt
Trenton	07-25	945m x 46m	Asphalt
Port Hawkesbury	12-30	1524m x 46m	Asphalt
Margaree	01-19	762m x 23m	Asphalt

New Brunswick

U.S.A.

Bay of Fundy

Digby from Saint John, N.B. Interprovincial

Caribou from Wood Islands, P.E.I. Interprovincial

Pictou Island Ferry passengers only

North Sydney from Channel-Port-aux-Basques, Nfld. Interprovincial

North Sydney from Argentia, Nfld. Interprovincial

Englishtown Ferry 12 vehicles

Little Narrows 8 vehicles

Grand Narrows Ferry 15 vehicles

Country Harbour Ferry 12 vehicles

Petite Passage Ferry 12 vehicles

Grand Passage Ferry 12 vehicles

Tancook Ferry passengers only

Halifax-Dartmouth Ferry passengers only

LaHave Ferry 12 vehicles

Yarmouth from Bar Harbor, Maine International

Yarmouth from Portland, Maine International

Sable Island

Atlantic Ocean

Amherst, Pugwash, Oxford, Springhill, Pictou, Trenton, New Glasgow, Stellarton, Antigonish, Mulgrave, Port Hawkesbury, St. Peter's, Parrsboro, Debert, Truro, Walton, Port Williams, Kentville, Wolfville, Windsor, Middleton, Greenwood, Annapolis Royal, Digby, Weymouth, Meteghan, Yarmouth, Shelburne, Clark's Harbour, Liverpool, Bridgewater, Dayspring, Halifax, Dartmouth, Sheet Harbour, Guysborough, Country Harbour Crossroads, Canso, Inverness, Margaree, Chéticamp, Baddeck, North Sydney, Sydney, Glace Bay, Louisbourg, Ingonish

Scale 1:2,000,000
0 20 40 60 80 kilometres
0 10 20 30 40 50 miles
Projection: UTM

Urban Transit Systems

Metro Transit System
Halifax — County of Halifax
Dartmouth — Bedford

Cape Breton Regional Transit Authority
Sydney — New Waterford
North Sydney — Glace Bay
Dominion — County of Cape Breton

Pictou County Regional Transit Authority
New Glasgow — Westville
Stellarton — Pictou
Trenton — County of Pictou

King's County Transit Authority
Kentville — County of Kings
Wolfville

Yarmouth-Argyle Transit Authority
Yarmouth — County of Yarmouth
District of Argyle

Truro-Colchester Joint Expenditure Board
(Disabled Persons Transit Only)
Truro — County of Colchester

Intercity Public Transportation Services

Acadian Lines
Halifax-Yarmouth via Annapolis Valley
Halifax-Sydney via Baddeck and via St. Peter's
Halifax-Amherst via Parrsboro and via Wentworth Valley

MacKenzie Bus Line
Halifax-Yarmouth via South Shore

Zinck's Bus Company
Sherbrooke-Halifax via Eastern Shore

Al's Taxi
Canso to Antigonish

Kennedy & Fraser Bus Line
Inverness-Port Hawkesbury

King's Transit Authority
Middleton-Kentville

Transoverland
Cheticamp-Sydney via Margaree Valley

Cabot Bus Lines
Cape North-Sydney

TRANSPORTATION

- Local Port
- Regional Port
- Port Corporation
- Major Via Rail Stop
- Regional Airport
- Minor Airport
- Military Airport
- Halifax International Airport
- Ferry
- Active Railway
- Inactive Railway

HIGHWAY CLASSIFICATION	KILOMETRES Paved	Unpaved	Total
Freeways	123	0	123
Arterials	2,498	0	2,498
Collectors	4,419	264	4,683
Locals	4,556	13,721	18,277

Source: Nova Scotia Department of Transportation, 1985 Data

Electrical Energy

An Essential Resource: Abundant electrical power at a reasonable cost is an essential resource for any modern industrial economy. The Nova Scotia Power Corporation is the provincially owned and operated public utility whose up-to-date system meets Nova Scotia's need for safe, reliable generation, transmission and distribution of electrical energy. As an instrument of public policy, the Corporation also fulfills an important social and economic mandate, contributing to the economic and resource development, employment, and financial stability of the province.

In Canada as a whole, the electricity industry provides about 25% of the total industrial energy used. In 1984-85, electricity accounted for 14.3% of the total energy used in Nova Scotia. Considering beneficial factors such as cleanliness, efficieny, and environmental acceptability, it is evident that there exists a vast potential for growth in the use of electrical energy.

At present, the Corporation provides some 340,000 customers — virtually the entire province — with electricity. Its transmission system (illustrated on the facing page) is connected with that of the New Brunswick Electric Power Commission to form an interprovincial grid for the exchange of power and energy, and for pooling reserve capacity. This grid is linked in turn, through the State of Maine, with the New England Power Pool, and through Hydro-Quebec with Ontario Hydro and with the Labrador portion of the Newfoundland power system.

Sources of Power: Steam-driven (thermal) plants at Lingan, Tufts Cove, Point Tupper, Trenton, Water Street, Glace Bay, and Maccan account for nearly 75% of the Nova Scotia Power Corporation's total generating capacity. The remainder is made up by 32 hydroelectric plants, three gas turbine operations, one tidal power station and a small windmill.

The following table, read in conjunction with the map on the facing page, illustrates the contribution of each type of generating plant to the energy total.

ELECTRICAL ENERGY GENERATION
IN NOVA SCOTIA — 1983-84

Type of Plant	Installed Capacity	'84-'85 Generation
Steam - Coal	922.8	5337.1
- Oil	745.8	803.0
Hydro	361.4	847.2
Tidal	19.5	13.9
Gas Turbine	179.8	1.1
Wind	—	—
Purchased	0.3	409.9
	2229.6	7412.2

Reducing Oil-Dependency: It can be seen from the foregoing data that by far the greatest proportion (over 80%) of Nova Scotia's electrical generation takes place in steam-powered thermal generating stations. Up until the late-1970's the majority of the generating capacity in such plants depended on imported oil as the primary energy source. With the mid-1970's came the world-wide crisis in crude oil prices. In response, the Nova Scotia Power Corporation embarked on the implementation of an "off-oil" policy.

Construction of new facilities, both hydro and coal-fired, have nad a dramatic impact on reducing Nova Scotia's dependency on imported oil for electrical generation. In all, 600 megawatts (MW) of coal-fired, and 207 MW of hydro generating capacity were added to the system between 1978 and 1984. The trend continues at the time of writing, with the result that projected electrical rates through the 1990's are expected to be significantly lower than they would otherwise have been.

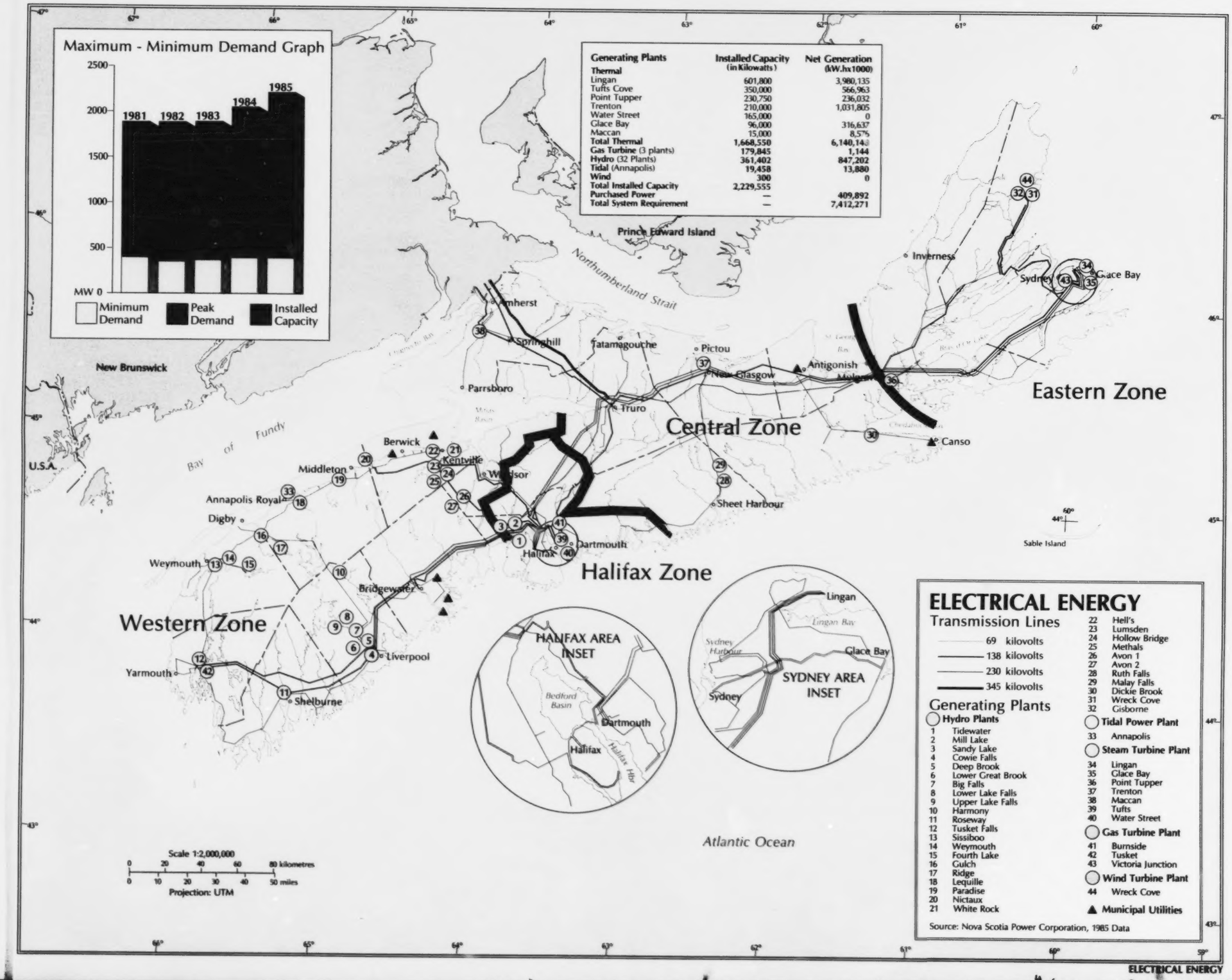
Conversion to coal-fired plant capacity offers a particular economic benefit to Nova Scotia by creating a stable, high-volume market for Cape Breton coal. (See coal resource map on page 45). The giant Lingan Generating Station burns in excess of 1.5 million tonnes of coal annually, while the planned conversion of the Point Tupper No. 2 Unit from oil to coal, scheduled for 1987, will, when completed, consume up to 400,000 additional tonnes a year, assuring further long-term employment benefits in the coal-mining industry.

The success of the "off-oil" strategy can best be appreciated by considering that in 1977 Nova Scotia used over 5.9 million barrels of oil to generate 64% of its electricity. In 1985, although total energy demand had increased by 21%, only 1.24 million barrels of oil were used to generate 14% of the province's electrical power. During the same period coal-fired generation increased from 13% of the total in 1977 to 71% in 1985. Current projections suggest that oil use will decline further, possibly to as little as 10% of the total, despite an anticipated load growth of 4.6% annually to 1989.

Energy Alternatives: The search for efficient alternate methods of power generation is an ongoing one. Although not considered practical for meeting large-scale needs in Nova Scotia at present, unconventional primary energy sources, such as fuel-grade peat, wood and wood wastes, and the burning of municipal solid wastes, are being continually reviewed and researched by the Corporation. Such research has produced one highly practical result in recent years. An experimental 20MW tidal power plant went into production at Annapolis Royal in 1984 as a prototype for future projects harnessing the immense power potential of the Bay of Fundy tides.

The Corporation is also involved in testing Atmospheric Fluidized Bed Combustion, which is viewed as an advanced method of burning coal in combination with a sorbent such as limestone, thereby greatly reducing sulphur dioxide emissions. This technology is expected to reach the point of full commercial feasibility before the end of the century.

Generating Plants	Installed Capacity (in Kilowatts)	Net Generation (kW.hx1000)
Thermal		
Lingan	601,800	3,980,135
Tufts Cove	350,000	566,963
Point Tupper	230,750	236,032
Trenton	210,000	1,031,805
Water Street	165,000	0
Glace Bay	96,000	316,637
Maccan	15,000	8,575
Total Thermal	1,668,550	6,140,143
Gas Turbine (3 plants)	179,845	1,144
Hydro (32 Plants)	361,402	847,202
Tidal (Annapolis)	19,458	13,880
Wind	300	0
Total Installed Capacity	2,229,555	
Purchased Power	—	409,892
Total System Requirement	—	7,412,271



ELECTRICAL ENERGY

Transmission Lines

- 69 kilovolts
- 138 kilovolts
- 230 kilovolts
- 345 kilovolts

Generating Plants

Hydro Plants
1 Tidewater
2 Mill Lake
3 Sandy Lake
4 Cowie Falls
5 Deep Brook
6 Lower Great Brook
7 Big Falls
8 Lower Lake Falls
9 Upper Lake Falls
10 Harmony
11 Roseway
12 Tusket Falls
13 Sissiboo
14 Weymouth
15 Fourth Lake
16 Gulch
17 Ridge
18 Lequille
19 Paradise
20 Nictaux
21 White Rock
22 Hell's
23 Lumsden
24 Hollow Bridge
25 Methals
26 Avon 1
27 Avon 2
28 Ruth Falls
29 Malay Falls
30 Dickie Brook
31 Wreck Cove
32 Gisborne

Tidal Power Plant
33 Annapolis

Steam Turbine Plant
34 Lingan
35 Glace Bay
36 Point Tupper
37 Trenton
38 Maccan
39 Tufts
40 Water Street

Gas Turbine Plant
41 Burnside
42 Tusket
43 Victoria Junction

Wind Turbine Plant
44 Wreck Cove

▲ Municipal Utilities

Source: Nova Scotia Power Corporation, 1985 Data

ELECTRICAL ENERGY

Manufacturing

Resource Related Industries: Not unexpectedly, Nova Scotia's natural resources have had a strong bearing on the location and types of the major manufacturing activities carried on in the province.

Fish processing, for example, with 162 operating establishments, is Nova Scotia's leading processing industry in terms of the value of its shipments ($431.5 million in 1982) and its contribution to employment (8,070 employees). It has been demonstrated in the fisheries section of this atlas that by far the greatest proportion of the commercial fishing in the province is conducted from ports in the counties of Lunenburg, Shelburne, Yarmouth, Digby, and Cape Breton. It is understandable, then, that over three quarters of both the fish processing plants and the employees in this industry should also be located in these five counties. Similarly, the Annapolis-Cornwallis Valley Region has been identified as the area of the most intensive agricultural production in Nova Scotia, especially for fruits and vegetables. This region is also the home of most of the province's major food processors.

Other manufacturing operations which are directly linked to the resource sector include those that process primary forest products — seven pulp and paper plants, 410 sawmills, and 125 other wood-related industries.

Non-Resource Related Industries: Nova Scotia's diversified manufacturing sector includes activity which is not directly linked with the province's natural resources. Although petroleum refining is a resource-based industry, the crude oil presently used by Nova Scotia's petroleum refineries is imported — primarily from South and Central America, the United Kingdom, and the Middle East. If anticipated development of Scotia Shelf oil and gas takes place, then refining and processing of these products could become an important local resource-based industry.

Within Nova Scotia there are about twenty manufacturing companies involved in the electronics field. Such firms produce a vast array of products, including computer equipment, meteorological systems and equipment, directional aids, and marine navigational equipment. Among the manufactured goods in other fields which are produced in Nova Scotia are tires, carpets, textiles, steel, industrial chemicals, automobiles, building supplies, batteries, boats, and books.

Table 1 provides an illustration of the diversity and importance of the manufacturing sector to Nova Scotia's economy. The data presented in this table do not cover all the manufacturing establishments in the province. This fact accounts for the apparent discrepancy between the figures shown in Table 1, and those in Table 2 under the heading "Contribution of Small Business".

Foreign Investment in Manufacturing: In 1980, sixty-five manufacturing establishments in Nova Scotia were controlled by foreign interests. Over two thirds of these establishments had parent companies in the United States.

Foreign investment in the province's manufacturing sector has played an important role in economic development, as demonstrated by the start-up of successful firms such as Michelin Tires (Canada) Ltd., Helly-Hansen (Canada) Ltd., Volvo Canada Ltd., Scott Maritimes Limited, and Polymer International (N.S.) Ltd.

The fish products industry has attracted the largest number of foreign investors to the province, but other food processing, pulp and paper, petrochemicals, and shipbuilding have also brought significant foreign owned operations to Nova Scotia. More than half the total value of Nova Scotia's manufacturing shipments is attributed to establishments with parent companies outside of Canada.

Employment in the Manufacturing Sector: Over 45,000 people are employed in the manufacturing sector in Nova Scotia, representing approximately 13% of the employed labour force. Over 30% of the employment in this sector is attributed to the food and beverage industries.

In all there are more than 1600 manufacturing establishments in Nova Scotia, of which 45 employ in excess of 200 people. The largest employers in the manufacturing sector are National Sea Products and Michelin Tires, each with multiple locations around the province, the provincially-owned Sysco steel plant at Sydney, and the pulp and paper mill operated by Nova Scotia Forest Industries at Point Tupper.

Contribution of Small Business: Small business plays a vitally important role in the Nova Scotia economy, with more than 1,460 of the province's manufacturers employing fewer than 50 people. Such establishments account for over 16% of the total value of manufacturing shipments, and 19% of the value added by manufacturing activity in the province.

Small, individually owned businesses are particularly important in a number of the less-populated regions because of the employment they provide for local residents. Table 2, below, demonstrates this point, presenting the number of manufacturing plants in Nova Scotia, and the number of jobs they provide.

Additions and Expansions: The past five years (1980-84) have seen the establishment of 411 new manufacturing plants in Nova Scotia, providing employment for over 4,900 people. These new establishments produce a broad range of manufactured goods, including fish products, other food products, prefabricated buildings, wooden furniture, doors and cabinets, clothing, fertilizers, ships and boats, hydraulic equipment, and survival suits. Plant expansions since 1980, involving approximately 250 firms within the province have resulted in the creation of an additional 1,420 jobs. Table 3, below, summarizes by year these increases to the manufacturing base of the province.

Table 1
MANUFACTURING-PRINCIPAL INDUSTRY GROUPS, 1982

Industry Group	No. of Establishments	No. of Employees	Total Wages & Salaries ($'000)	Value of Shipments ($'000)	Value Added ($'000)
Food & Beverage	205	11,850	186,549	969,915	313,178
Textiles	21	1,160	17,186	81,393	46,164
Clothing	5	171	1,642	6,145	3,719
Wood Industries	129	1,617	22,251	78,653	32,400
Furniture & Fixtures	42	243	3,095	10,924	6,095
Paper & Allied	15	2,918	71,790	344,485	168,279
Printing & Publishing	86	1,567	28,964	79,506	54,465
Metal Fabricating	71	1,408	27,265	99,218	50,879
Machinery Industries	12	394	7,774	12,287	6,805
Transportation Equipment	55	2,853	62,017	273,215	87,828
Electrical Products	13	1,001	19,622	42,357	18,077
Non-Metallic Mineral Products	41	735	15,438	62,467	30,498
Chemical & Chemical Products	17	1,105	34,662	134,837	42,350
Miscellaneous Mfg.	40	349	5,405	14,655	7,524
Total, All Industries	781	34,646	671,539	3,610,726	1,123,255

Source: Statistics Canada, 31-203

Table 2
MANUFACTURING PLANTS BY EMPLOYMENT SIZE

No. of Employees	Number of Plants	Number Employed
0-4	672	1,600
5-9	314	2,066
10-19	237	3,027
20-49	244	6,880
50-99	77	5,045
100-199	43	5,545
200-299	20	4,610
300-399	11	3,587
400-499	2	800
500-999	6	3,707
1000 and over	6	8,800
TOTAL	1,632	45,667

Table 3

	NEW ESTABLISHMENTS		PLANT EXPANSIONS	
Year	Number of Plants	Employment	Number of Plants	Employment
1980	147	1,494	46	215
1981	90	569	78	603
1982	82	1,340	46	368
1983	75	724	75	227
1984	17	795	8	9

Industrial Parks

			Area
Annapolis County	1	Middleton	28 ha
Cape Breton County	2	Sydport	219 ha
Colchester County	3	Debert Air	1108 ha
	4	Truro	86 ha
Cumberland County	5	Amherst	178 ha
	6	Oxford	14 ha
	7	Parrsboro	30 ha
	8	Springhill	18 ha
Guysborough County	9	Canso	19 ha
	10	Mulgrave	25 ha
Halifax County	11	Aerotech	749 ha
	12	Atlantic Acres	47 ha
	13	Bayers Lake	81 ha
	14	Bedford	46 ha
	15	Burnside	567 ha
	16	Eastern Shore	47 ha
	17	Hammonds Plains	202 ha
	18	Lakeside	36 ha
	19	Ragged Lake	324 ha
	20	Sackville	67 ha
	21	Woodside	71 ha
Hants County	22	Windsor	16 ha
	23	Windsor – West Hants	32 ha
Inverness County	24	Port Hawkesbury	40 ha
Kings County	25	Annapolis Valley	70 ha
Lunenburg County	26	Bridgewater	59 ha
	27	Lunenburg	11 ha
Pictou County	28	Stellarton	53 ha
Queens County	29	Liverpool	6 ha
Richmond County	30	Point Tupper	1838 ha
	31	Richmond County	55 ha
Shelburne County	32	Shelburne	30 ha
Yarmouth County	33	Yarmouth	15 ha

Gulf of St. Lawrence

New Brunswick

U.S.A.

CUMBERLAND COUNTY

COLCHESTER COUNTY

PICTOU COUNTY

INVERNESS COUNTY

VICTORIA COUNTY

ANTIGONISH COUNTY

CAPE BRETON COUNTY

KINGS COUNTY

ANNAPOLIS COUNTY

HANTS COUNTY

RICHMOND COUNTY

DIGBY COUNTY

GUYSBOROUGH COUNTY

YARMOUTH COUNTY

LUNENBURG COUNTY

HALIFAX COUNTY

QUEENS COUNTY

SHELBURNE COUNTY

Amherst 5
Oxford 6
Springhill 8
Parrsboro 7
Debert 3
Truro 4
Stellarton 28
Inverness
Sydney 2
Mulgrave 10
Port Hawkesbury 24
Point Tupper 30
Louisdale 31
Canso 9
Middleton 1
Kentville 25
Windsor 23 22
Musquodoboit Harbour 16
Bedford 12
Halifax 14 17 15 18 13 21
Dartmouth
Bridgewater 26
Lunenburg 27
Liverpool 29
Yarmouth 33
Shelburne 32
Sable Island

Scale 1:2,000,000
0 20 40 60 80 kilometres
0 10 20 30 40 50 miles
Projection: UTM

MANUFACTURING

Value added in the manufacturing sector

- $300,000 or more
- $200,000 - 299,999
- $100,000 - 199,999
- $50,000 - 99,999
- less than $50,000

- Agriculture
- Forestry
- Fisheries
- Mineral

Resource Based Manufacturing

- Non-resource based Manufacturing
- 1 Industrial Parks (refer to chart)
- Industrial Malls (provincial and municipal)

Number of Plants	Number of Employees
9,000 +	400 +
4,000 - 6,000	100 - 140
2,000 - 3,999	60 - 99
1,000 - 1,999	20 - 59
1 - 999	1 - 19

Sources: Nova Scotia Department of Development and Statistics Canada, 1981 Data and the 1982 Census of Manufacturers.

MANUFACTURING

The Nova Scotia Labour Force

Among the many natural resources of Nova Scotia, the map facing this page illustrates the most vitally important resource of all — the people of the province, whose work converts those natural resources into real wealth.

What is the labour force? The active "labour force" refers to that portion of the population aged 15 years and over, which is either working or actively seeking paid employment, at a given time.

The following chart demonstrates what proportion of the Nova Scotia population participated in the labour force in 1971 and in 1981.

NOVA SCOTIA LABOUR FORCE: PARTICIPATION TRENDS 1971-1981

	Male		Female		Total	
	1971	1981	1971	1981	1971	1981
Population (15+)	273,600	314,713	275,043	326,997	548,643	641,710
Labour Force	198,360	230,370	93,790	148,130	286,445	378,500
Participation Rate	72.5%	73.2%	34.1%	45.3%	52.2%	59%

The numerical increase in the labour force (92,055) over the decade almost matched that of the population of working age (93,067), thus increasing the overall participation rate to 59%. However, the increased participation in the labour force is almost entirely attributable to the greater proportion of the female population entering the job market. While male participation in the labour force rose by less than one per cent from 1971 to 1981, female participation rose by over 11%. Continuation of this trend is demonstrated by the fact that female participation in the Nova Scotia labour force rose to 48.3% by 1984.

Where People Work: Reference to the map facing this page leads to a more detailed understanding of distribution and trends in the labour force. For instance, it is evident that female participation is the highest by far (54.6% in 1981) in Halifax County, the most heavily urbanized area of Nova Scotia. This is in marked contrast to the rate in the counties of Guysborough (34.1%), Queens (35.6%), and Richmond (35.6%), all of which retain a more rural and traditional character.

The Labour Force — Industrial Distribution: An important indicator of changes in labour market conditions is the allocation of the labour force to the *primary*, *manufacturing*, and *other* industrial sectors of the economy.

Primary industries involve the extraction of products from the natural resource base. Principal among these in Nova Scotia are agriculture, forestry, mineral extraction, and fishing. In this atlas, construction has also been included among the primary industries. *Manufacturing* refers to those industries which involve the processing of primary resource commodities and semi-finished goods into finished products. *Other* includes a wide range of service occupations, including government services (health, education, defence, etc.); culture and recreation; tourism; professional and business services; wholesale and retail trade; as well as transportation, communications, and utilities.

Changes in the distribution of the labour force by industrial category can indicate real changes in the economic patterns of a society. The steady swing towards a "post-industrial society" in Nova Scotia is amply demonstrated by the following table.

NOVA SCOTIA LABOUR FORCE: DISTRIBUTION BY INDUSTRY 1971-1981

	1971	1981	Actual Increase	Share of Increase
Primary/Const.	37,350 (13%)	44,965 (12%)	7,615 (20%)	8%
Manufacturing	41,260 (14%)	55,925 (15%)	14,665 (35%)	16%
Other	207,835 (73%)	277,605 (73%)	69,770 (34%)	76%
Total Labour Force	286,445 (100%)	378,495 (100%)	92,050 (32%)	100%

Over the decade from 1971 to 1981 there was clearly a significant increase in the size of the labour force in all sectors. However, it is equally clear that the relative increase re-affirmed the dominant role of the service sector in creating jobs in the past several decades.

This does not mean that the primary and manufacturing sectors are less important to the economy of Nova Scotia. Rather, in large measure, the trend reflects the impact of technological advances. Widespread mechanization and automation have inevitably resulted in a relatively smaller requirement for labour in the production of many goods. At the same time, a level of general economic prosperity undreamed of a century ago has contributed to an unprecedented demand for services of all kinds.

The map reveals important variations in this pattern from county to county. In the Metropolitan Halifax area, with its concentration of administrative, business, and trade activity, 87% of the 1981 labour force is seen to be concentrated in the services sector. In contrast to this, in the counties of Yarmouth and Lunenburg, where fishing and fish processing are key industries, more than one third of the 1981 labour force was employed in the primary sector, and nearly half in the manufacturing sector.

Income: An Indicator of Economic Growth Effective January 1, 1985, the Nova Scotia minimum wage was set by law at $4.00 per hour for experienced employees aged 18 years and over, and $3.55 for underage and inexperienced employees. Statutory minimum wage levels, however, do not define personal income patterns across the province. The inset chart of 1982 tax returns, shown on the Labour Force map, provides an overall summary of individual incomes for the province as a whole, and for each county. The chart summarizes all individual income tax returns — not just those of labour force participants, but also those of recipients of income from all other sources. The number of tax returns is thus greater than the number of participants in the labour force.

The significance of this distinction becomes evident when per capita personal income in Nova Scotia is compared with per capita industrial wages. In 1984, the average per capita income in Nova Scotia stood at an estimated $11,474 — approximately 81% of the national average of $14,291. However, in the first ten months of the same year, industrial wages in Nova Scotia averaged $358.42 per week — a yearly rate of $18,637 or 88.7% of the average across Canada.

Not only industrial earnings, but personal incomes in general, have recently been increasing faster in Nova Scotia than in Canada as a whole. The period from 1980 to 1984 witnessed an average annual growth rate of per capita income for the province of 7.4%, compared to a national rate of 6.9% per year.

Growth of family incomes provides the most significant stimulus for economic growth in Nova Scotia. The 1981 Census of Canada reported that the average income of a census family residing in Nova Scotia was $21, 872 in 1980. This compared with an average census family income of $17,014 (in 1980 dollars) in 1970. In other words, average real family income increased by 28% over the decade, which was the same increased observed for all of Canada. The number of families in Nova Scotia increased by 20.4% during this period. This increase was accompanied by a major shift of family incomes into higher income brackets.

NOVA SCOTIA FAMILY INCOMES: 1970-1980 (in constant 1980 dollars)

Income Bracket	No. of Families 1970	No. of Families 1980
Less than $5,000	15,640 (8.7%)	11,435 (5.3%)
$5,000-$9,999	36,880 (20.5%)	29,545 (13.7%)
10,000-14,999	38,380 (21.4%)	34,815 (16.1%)
15,000-19,999	34,815 (19.4%)	35,640 (16.5%)
20,000-24,999	22,745 (12.7%)	33,255 (15.4%)
25,000-29,999	13,320 (7.4%)	24,710 (11.4%)
30,000-34,999	7,170 (4.0%)	17,205 (8.0%)
35,000-39,999	3,830 (2.1%)	10,385 (4.8%)
40,000-44,999	2,085 (1.2%)	6,580 (3.0%)
45,000 and over	4,650 (2.6%)	12,615 (5.8%)
Totals	179,530 (100%)	216,185 (100%)

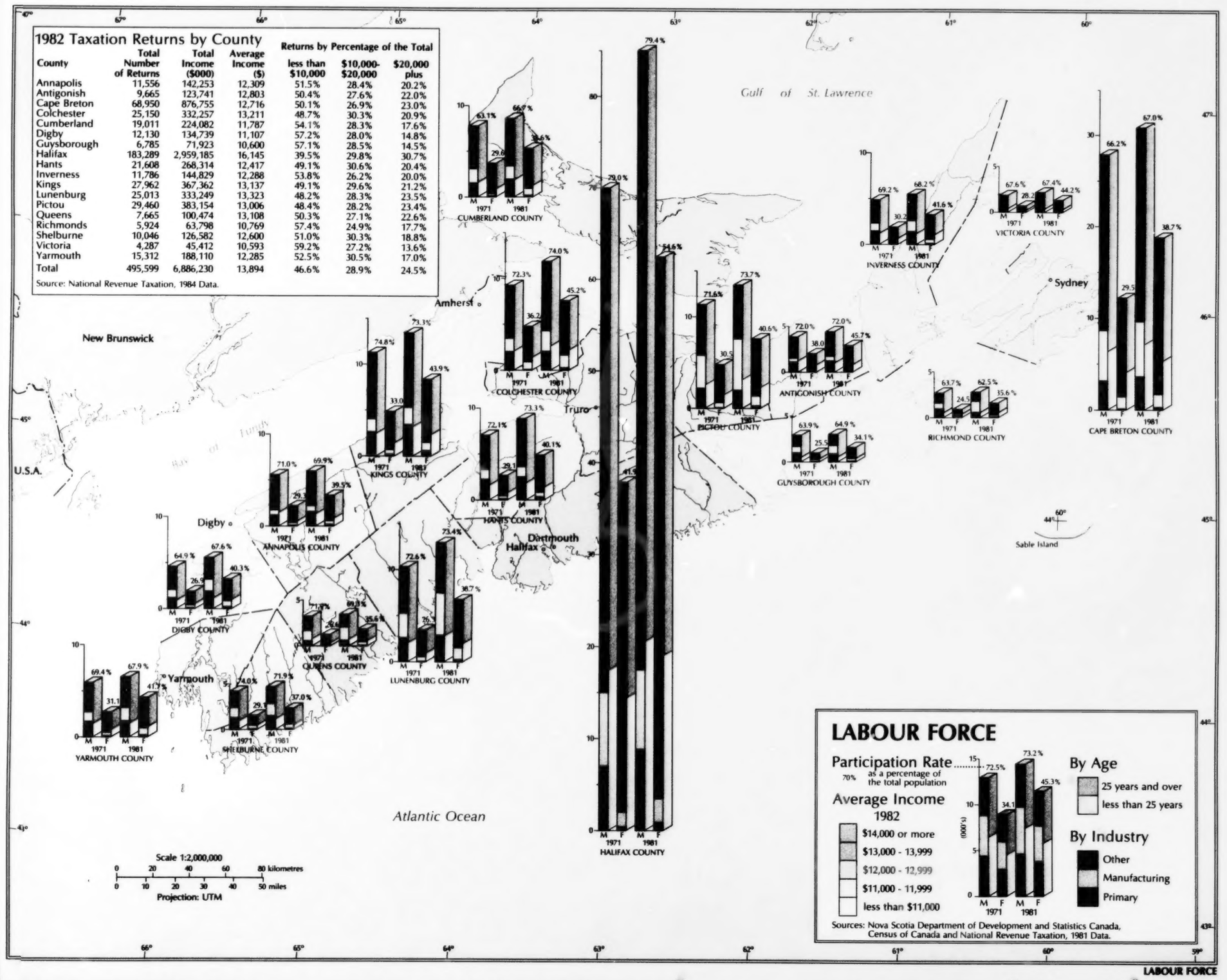
This table shows that between 1970 and 1980 the number of families reporting income under $20,000 (in 1980 dollars) declined by 11.4%. Families with incomes of over $20,000 increased by 94.7%. The number of families with incomes of $35,000 or more nearly tripled during the decade.

A more detailed analysis of data for this period would reveal variances between the incomes of urban and rural families; between those of two-parent families, male singe-parent families, female single-parent families, and persons not in families; and between individuals or families of different ages. Nonetheless, the figures indicate that, in general terms, Nova Scotians entered the 1980's significantly better off than they had been ten years earlier.

1982 Taxation Returns by County

County	Total Number of Returns	Total Income ($000)	Average Income ($)	Returns by Percentage of the Total: less than $10,000	$10,000-$20,000	$20,000 plus
Annapolis	11,556	142,253	12,309	51.5%	28.4%	20.2%
Antigonish	9,665	123,741	12,803	50.4%	27.6%	22.0%
Cape Breton	68,950	876,755	12,716	50.1%	26.9%	23.0%
Colchester	25,150	332,257	13,211	48.7%	30.3%	20.9%
Cumberland	19,011	224,082	11,787	54.1%	28.3%	17.6%
Digby	12,130	134,739	11,107	57.2%	28.0%	14.8%
Guysborough	6,785	71,923	10,600	57.1%	28.5%	14.5%
Halifax	183,289	2,959,185	16,145	39.5%	29.8%	30.7%
Hants	21,608	268,314	12,417	49.1%	30.6%	20.4%
Inverness	11,786	144,829	12,288	53.8%	26.2%	20.0%
Kings	27,962	367,362	13,137	49.1%	29.6%	21.2%
Lunenburg	25,013	333,249	13,323	48.2%	28.3%	23.5%
Pictou	29,460	383,154	13,006	48.4%	28.2%	23.4%
Queens	7,665	100,474	13,108	50.3%	27.1%	22.6%
Richmonds	5,924	63,798	10,769	57.4%	24.9%	17.7%
Shelburne	10,046	126,582	12,600	51.0%	30.3%	18.8%
Victoria	4,287	45,412	10,593	59.2%	27.2%	13.6%
Yarmouth	15,312	188,110	12,285	52.5%	30.5%	17.0%
Total	495,599	6,886,230	13,894	46.6%	28.9%	24.5%

Source: National Revenue Taxation, 1984 Data.



LABOUR FORCE

Participation Rate
70% as a percentage of the total population

Average Income 1982
- $14,000 or more
- $13,000 - 13,999
- $12,000 - 12,999
- $11,000 - 11,999
- less than $11,000

By Age
- 25 years and over
- less than 25 years

By Industry
- Other
- Manufacturing
- Primary

Sources: Nova Scotia Department of Development and Statistics Canada, Census of Canada and National Revenue Taxation, 1981 Data.

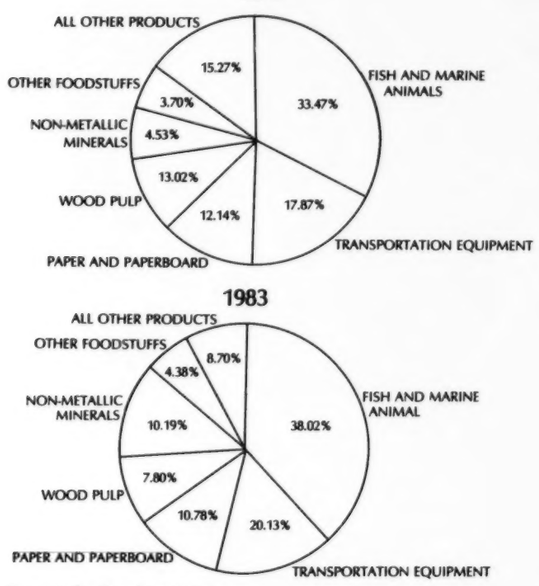
LABOUR FORCE

Nova Scotia's Export Markets

Historically, since the earliest days of European settlement, much of Nova Scotia's economy was built upon shipping and international trade. This led to the development, within the province, of considerable expertise in serving diverse world markets, and to the establishment of sophisticated transportation networks (see Transportation map on p. 59) to facilitate this activity.

Those historic skills and patterns have continued to the present day. Foreign exports (i.e. to destinations outside Canada) of Nova Scotia goods in 1983 were valued at $1.1 billion, a 19.6% increase in the five year period since 1979.

NOVA SCOTIA EXPORTS BY PRODUCT GROUP

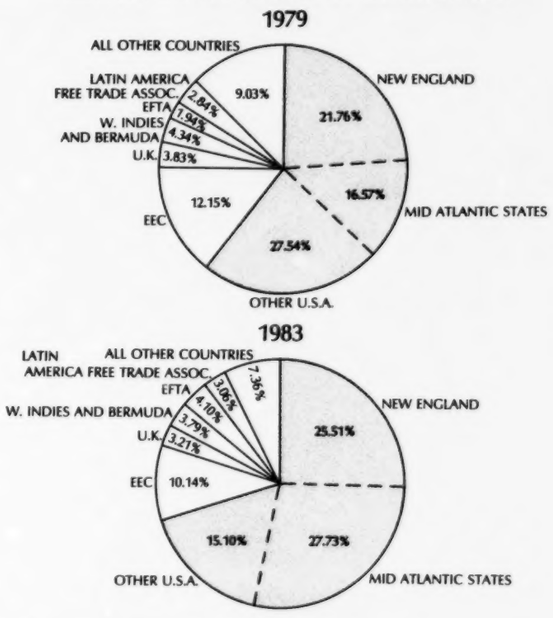


Exports by Product Group
It can be seen from the foregoing charts that the largest provincial export items are fresh and processed fish products (see Fisheries map, pp. 32 to 39), which account for 38% of total exports. The next largest group of exports consists of transportation equipment, at 20.1%, followed by wood pulp, paper and paper board with 18.6% of the total. Together, these three groups made up 76.7% of the province's total exports in 1983. A wide range of other raw products and processed goods accounted for the remaining 23.3%.

Export Destinations:
Over the past five years, the United States has, on average, absorbed 64.2% of Nova Scotia foreign exports, although this rose to 68.3% in 1983. The New England and Mid-Atlantic states were the destination for almost 78% of all goods going to the U.S.A.

The European Common Market (excluding the United Kingdom) continues to be Nova Scotia's second largest market, although there has been no growth in the value of exports to this destination over the past five years. The West Indies and Bermuda, traditionally the third most important market for provincial goods, have not shown any growth in recent years, while the U.K. market has remained almost unchanged in terms of value since 1980. The European Free Trade Association, on the other hand, has been a significant growth market in the eighties. Exports to the Latin America Free Trade Association market increased dramatically in 1980 and 1981, but declined in 1982 and 1983.

NOVA SCOTIA EXPORTS BY DESTINATION



Commodity Details:
On an individual commodity basis, exports fluctuate considerably from year to year. However, the data for 1983 give some general insight into the relative importance of many products.

In the fish products category, exports of 17 000 tonnes (18,700 tons) of fresh shellfish were valued at $165.2 million. Fresh and frozen scallops, valued at $78 million, were the largest item in this group, followed by live lobsters and lobster meat valued at $66 million. While virtually all scallop exports are to U.S. markets, the market for lobsters is more diversified. Entire plane loads are often shipped from Halifax to France, Belgium, The Netherlands, West Germany, and the United Kingdom. Lobster exports in excess of $1 million in value were shipped to each of these countries, as well as to Japan, in 1983. Other major shellfish exports include crab and shrimp.

Cod is the major species of groundfish among provincial exports. Shipments in three principal states — salted, frozen fillets, and frozen blocks — each earned approximately $40 million in 1983. Other groundfish exports include fresh and frozen haddock, herring, sole, and halibut.

Other notable food product exports in 1983 included $1.8 million worth of apples to the United Kingdom. Fresh blueberry exports valued at $2.3 million were destined primarily to the United States, while frozen blueberry exports of $10.8 million were almost evenly divided between American and European markets. In recent years, the Japanese market for blueberries has expanded remarkably, to the point that exports reached almost $900,000 in 1983. Other processed food exports include fruit juices, canned and frozen fruits and vegetables, pickles, spices and confectionery. Significant quantities of locally produced ale are also marketed in the United States.

Among the animal products exported from Nova Scotia in 1983 were $24 million worth of hides and $2 million worth of fur skins, primarily ranch mink. Natural plant products which have long-standing export markets include peat moss, Christmas trees and sea mosses.

Mineral exports vary considerably, depending on production levels and international market conditions. Coal, however, is the leading commodity, with exports of 1.2 million tonnes (1.3 millions tons), valued at $80.2 million in 1983. Nova Scotia traditionally produces 70% of Canada's gypsum. Almost all is shipped to the eastern seaboard and Gulf coast of the United States. In 1983 these exports totalled 4.7 million tonnes (5.2 million tons), worth over $30 million. The province is a major producer of salt for table and road use, and $3 million worth of this commodity went to many corners of the world in 1983.

Wood-based exports include spruce, pine, and fir lumber, the majority of which is shipped to the United Kingdom. The province's three pulp and paper mills export a significant proportion of their outputs. In 1983, wood pulp exports were valued at almost $88 million, while newsprint paper and hardboard exports exceeded $120 million.

The motor vehicle export sector is comprised of automobiles produced by Volvo Canada, ambulances by Tri Star Industries, batteries by Surrette Battery, and tires by Michelin Tires (Canada) Ltd. A traditional ship-building area, the province has many yards which produce pleasure and fishing craft for sale in many countries. Marine equipment and accessories are also produced for export markets. Companies such as IMP, Internav, Hermes Electronics, Orion Electronics, Surfline Engineering, Nautical Electronic Laboratories, Aerovox Canada, and Northern Telecom, producing electronic, electrical, and communications equipment, have established a place for Nova Scotia in the expanding world market for high technology products. In 1983, exports of industrial and specialty industrial machinery topped $8.5 million, while precision equipment exports were valued in excess of $14.5 million.

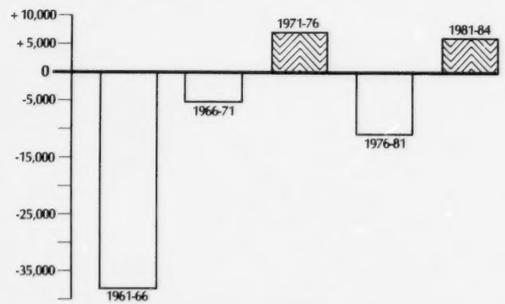
Education and Population

Shifting Patterns

Population growth in Nova Scotia in the twenty years prior to 1981 was relatively slow, when compared to the rate in Ontario and western Canada, although similar to the rate in the other Atlantic Provinces and Quebec. Since the early sixties, declining birth rates, an increasing number of deaths, and low levels of international migration slowed the growth of the population for Canada as a whole. For Nova Scotia, fluctuating levels of net outmigration to other provinces during the sixties and seventies further reduced the rate of growth.

In the first half of the nineteen eighties, the economic climate in Nova Scotia improved dramatically, relative to other areas. Residents who had sought employment in western Canada during the oil boom period of the previous decade began returning in significant numbers. The following graph illustrates the general migrations patterns over the period.

NOVA SCOTIA TOTAL NET MIGRATION



The population of Nova Scotia increased by nearly one hundred thousand between 1951 and 1961, but by only slightly more than half that number in the next decade to 1971. Growth picked up from 1971 to 1976, but slowed considerably in the later seventies. Since 1981, the rate of population growth has once more increased to that of the early seventies, because of the migration trends noted above.

There was a notable decline in the number of births within the province between 1961 and 1976. Since then, the birth rate has remained steady at about 12,000 per year. The number of deaths in 1983 was also about equal to that in 1976, and has remained steady, despite an increase in the population over 65 years of age, owing to the overall increase in life expectancy. However, the natural increase in the population, calculated by subtracting deaths from live births, has dropped from over 13,000 in 1976 to just over 5,000 in 1983.

While the number of marriages in Nova Scotia has decreased by only 9% since 1971, a growing proportion are second or third marriages for one or both partners. Divorces have increased threefold in this period, from 721 in 1971 to 2,340 in 1983.

VITAL STATISTICS

Year	Births	Deaths	Natural Increase	Marriages	Divorces
1951	17,125	5,812	11,313	5,094	187
1956	19,106	5,738	13,368	5,543	230
1961	19,382	6,135	13,247	5,292	245
1966	15,220	6,478	8,742	5,833	406
1971	14,250	6,682	7,568	6,883	721
1976	12,821	6,955	5,866	6,690	1,753
1981	12,079	6,142	5,937	6,632	2,285
1983	12,090	6,930	5,160	6,270	2,340

Distribution of Population

Most of the Nova Scotia population is located within twenty miles of the coast, while extensive areas of the interior are sparsely settled. In 1981, 24.3% of the population lived in the three cities of Halifax, Dartmouth, and Sydney. A further 20.7% was located in the thirty-nine incorporated towns, ranging in size from 631 in Annapolis Royal to 21,466 in Glace Bay. While the urban population, as a proportion of the provincial total, actually declined from 56.5% in 1976 to 55.1% in 1981, most of the growth in rural areas was on the outskirts of the towns and cities.

The Halifax Metro Area, with a population of 277,727 in 1981, is the largest urban concentration in the Atlantic Provinces. It includes Halifax City, Dartmouth City, the Town of Bedford, and the communities of Cole Harbour, Waverly, Sackville, Herring Cove, and Hubbards. The urban area around Sydney has a population of over 120,000 and includes the towns of Glace Bay, New Waterford, Dominion, North Sydney, and Sydney Mines.

Age-Sex Distribution

The declining number of births since 1961 has resulted in a drop of 22.6% in the zero to fourteen age group over the past twenty years. Whereas this age group accounted for 34.8% of the total population in 1961, by 1981 it made up only 23.4% of the total. At the other end of the spectrum, the population 65 years of age and over grew from 8.6% to 10.9% of the population during the same period. By 1981, the "baby boom" generation which followed World War II had reached the 25 to 34 year age group, expanding it by 45.9% in only a decade. The following table summarizes the changing age distribution of the provincial population since 1951.

POPULATION BY AGE GROUP
(as a % of the total population)

Age Group	1951	1961	1971	1981
0-14	32.6	34.8	30.5	23.4
15-24	15.2	15.4	18.8	19.4
25-34	14.5	11.8	12.1	16.4
35-44	12.9	12.2	10.3	11.4
45-64	16.1	17.2	19.0	18.4
65+	8.5	8.6	9.2	10.9
Total Population:	642,584	737,007	788,960	847,440

A predicted second baby boom, projected on the basis of the previous baby boom generation's reaching child-bearing age, has not materialized. The lower birth rates, combined with a greater number of females in the 20-34 age group has resulted only in a levelling off in the number of births in the past several years.

There has been a notable shift in the ratio of males to females in the overall population of Canada. In 1961, males outnumbered females in Nova Scotia by 103.2 to 100; however, by 1981 there were 102.0 females for every 100 males.

Marital Status

Between 1971 and 1981 the most significant change in the marital status of the Nova Scotia population was the more than threefold increase in the number of divorced persons. Within one decade, the divorced group grew from under one per cent of the population over 15 years of age, to 2.5%. The number of those who were either married or separated declined slightly as a proportion of the total population over 15 years of age during the same period. While the population of single (never married) status declined slightly, as a proportion of the overall population, the 25-34 age group exhibited a marked increase in those of single status, reaching 18% of the total by 1981.

POPULATION (15 years +) BY MARITAL STATUS

Status	Number		Per cent of Total	
	1971	1981	1971	1981
Single	158,860	184,510	29.0	28.4
Married or Separated	344,795	402,500	62.9	61.9
Widowed	39,430	45,475	7.2	7.0
Divorced	5,110	16,460	0.9	2.5
Total population 15+	548,195	648,945	100.0	100.0

Health Care

The Nova Scotia Health Services and Insurance Act provides residents of the province with free physician's services, surgical and dental services in hospitals, drug programmes for residents 65 years and over, dental services for children to age 16, and several other specialized services. Approximately 1,500 physicians and 300 dentists provide services under the government programme.

Hospitals are located throughout the province, with 45 public general hospitals having 4,870 beds and 480 bassinets. A maternity hospital with 126 beds and 124 bassinets, a psychiatric facility with 394 beds, a mental hospital with 65 beds, a rehabilitation centre with 52 beds, and three Department of National Defence facilities with 162 beds complete the list of health care facilities.

Education

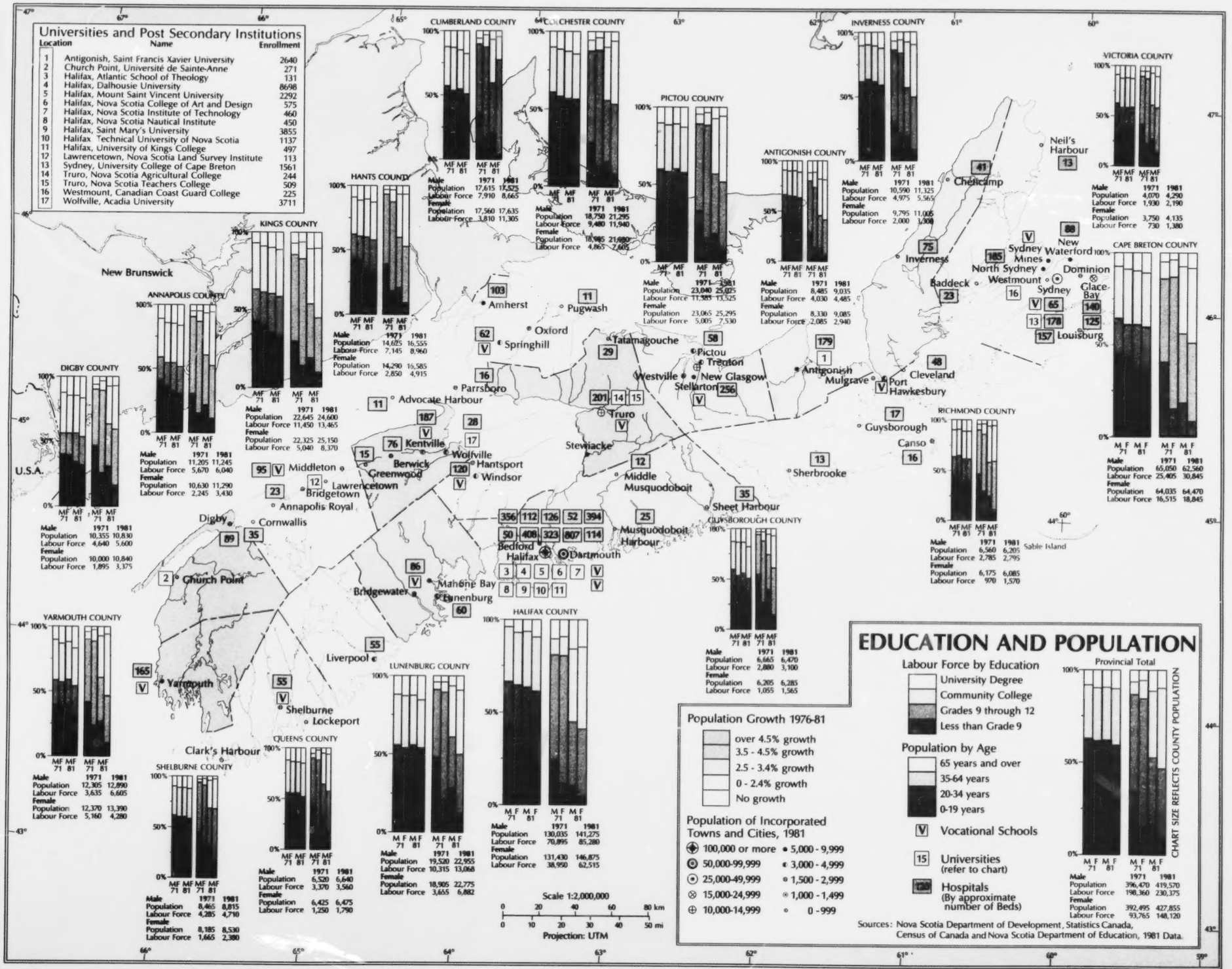
Public education in the Nova Scotia school system is provided from Primary to Grade 12. The baby boom generation having now moved entirely through the system, the school population has begun to stabilize. The total enrolment in elementary and secondary schools in 1983-84 was approximately 180,000, seventeen per cent below the 1971-72 enrolment of 216,750. Pupil/teacher ratios have improved notably over this period, declining to about 17 to 1 in 1983-84.

The educational qualifications of the Nova Scotia labour force and the overall population compare favourably with the Canadian average. Whereas 32.4% of the provincial population 15 years of age and over had less than a Grade 9 education in 1971, this had dropped to 22% by 1981. In the same period, the number with a university degree more than doubled, to reach 7.4% of the adult population. For those persons in the active labour force in 1981, 10.6% had a university degree, while a further 38.6% had trade or vocational training from outside the secondary school system.

Post-secondary education is available at fourteen vocational schools throughout the province, with a combined enrolment of about 6,500. Eight universities offer a variety of liberal arts, science, and professional courses. As well, there are several specialized universities and colleges, such as the Technical University of Nova Scotia, the Agricultural College, the Teacher's College, and the College of Art and Design. Other specialized institutions include the Land Survey Institute, the Canadian Coast Guard College, the Nautical Institute, the Atlantic School of Theology, the Maritime School of Social Work, and the Institute of Technology. Total enrolment in these facilities exceeds 25,000 full-time and 4,000 part-time students.

Universities and Post Secondary Institutions

Location	Name	Enrollment
1	Antigonish, Saint Francis Xavier University	2640
2	Church Point, Université de Sainte-Anne	271
3	Halifax, Atlantic School of Theology	131
4	Halifax, Dalhousie University	8698
5	Halifax, Mount Saint Vincent University	2292
6	Halifax, Nova Scotia College of Art and Design	575
7	Halifax, Nova Scotia Institute of Technology	460
8	Halifax, Nova Scotia Nautical Institute	450
9	Halifax, Saint Mary's University	3855
10	Halifax Technical University of Nova Scotia	1137
11	Halifax, University of Kings College	497
12	Lawrencetown, Nova Scotia Land Survey Institute	113
13	Sydney, University College of Cape Breton	1561
14	Truro, Nova Scotia Agricultural College	244
15	Truro, Nova Scotia Teachers College	509
16	Westmount, Canadian Coast Guard College	225
17	Wolfville, Acadia University	3711



EDUCATION AND POPULATION

Labour Force by Education
- University Degree
- Community College
- Grades 9 through 12
- Less than Grade 9

Population by Age
- 65 years and over
- 35-64 years
- 20-34 years
- 0-19 years

Population Growth 1976-81
- over 4.5% growth
- 3.5 - 4.5% growth
- 2.5 - 3.4% growth
- 0 - 2.4% growth
- No growth

Population of Incorporated Towns and Cities, 1981
- 100,000 or more
- 50,000-99,999
- 25,000-49,999
- 15,000-24,999
- 10,000-14,999
- 5,000 - 9,999
- 3,000 - 4,999
- 1,500 - 2,999
- 1,000 - 1,499
- 0 - 999

V Vocational Schools

15 Universities (refer to chart)

120 Hospitals (By approximate number of Beds)

Provincial Total
Male 1971 1981
Population 396,470 419,570
Labour Force 198,360 230,375
Female
Population 392,495 427,855
Labour Force 93,765 148,120

CHART SIZE REFLECTS COUNTY POPULATION

Sources: Nova Scotia Department of Development, Statistics Canada, Census of Canada and Nova Scotia Department of Education, 1981 Data.

Tourism in Nova Scotia

Nova Scotia — Canada's Ocean Playground — is one of North America's favourite tourist destinations, and has been for more than one hundred years. Every year more than one million out-of-province visitors come to vacation in this sea-bound province, accounting for travel expenditures in excess of $600 million and creating employment for some 27,000 Nova Scotians.

As a renewable resource, tourism is non-polluting, provides employment and economic benefits, improves the quality of life of residents through the presence of parks, attractions, and other infrastructure, and provides a degree of increased social awareness through the visits of foreign travellers.

Nova Scotia's tourism "plant" — the attractions, facilities, and services — is made up of a variety of features which hold a particular appeal to certain segments of the travelling public.

These features include the province's coastal scenery, its historic sites, its outdoor recreational opportunities, and its reputation as a relaxing peaceful, friendly tourist destination.

The Sea-Bound Coast: Nova Scotia's coastal scenery is a major element in the tourism plant. The province is bordered by four bodies of water — the Atlantic Ocean, the Bay of Fundy, the Northumberland Strait, and the Gulf of St. Lawrence — and the coastline stretches to include 10,427 km (6,517 mi.) of bays, coves, harbours, inlets, passages, channels, basins, points, heads, promontories, islands, capes, beaches, salt marshes, estuaries and clam flats. Along the length of these remarkably varied shores is a profusion of lighthouses, fishing ports, wharves, coastal hiking trails, campgrounds, resorts, and accommodations "on the water" to satisfy the desires of visitors looking for a maritime vacation experience.

Scenic Travelways: Approximately one third of Nova Scotia's paved roads follow the shoreline, and there are eight scenic travelways, each of which borders some portion of the Nova Scotia coast. These scenic travelways, designated by appropriate highway signage and map logos, are as follows:

The Sunrise Trail from Amherst to Auld's Cove, along the Northumberland Shore; *The Glooscap Trial* from Amherst to Blomidon, along the shores of the Minas Basin; *The Evangeline Trail* from Yarmouth to Mount Uniacke, through the Annapolis Valley; *The Lighthouse Route* from Yarmouth to Peggy's Cove, along the South Shore; *The Marine Drive* from Dartmouth to Auld's Cove, following the Eastern Shore; *The Fleur-de-Lis Trail* from Port Hawkesbury to Point Michaud in southeastern Cape Breton; *The Ceilidh Trail* from Port Hastings to Margaree Harbour on the western shore of Cape Breton; *The Cabot Trail*, a 300 km (184-mile) loop around the highlands of Cape Breton, starting and ending in Baddeck.

Special Attractions: Nova Scotia's long and colourful history has endowed it with a rich cultural heritage that not only attracts bona fide history buffs, but appeals to the general touring public as well. There are 144 provincial, private, and local museums in Nova Scotia, and seven National Historic Parks. Among the latter is Fortress Louisbourg on Cape Breton Island, listed by Tourism Canada as a "Category A" destination, which means that it is a unique, world-class tourism product, able to draw visitors from around the world.

"Category B" destinations are considered to be competitive with similar major products throughout the continent, and therefore are likely to generate visits from North American markets. Nova Scotia has two destinations which merit this designation — Peggy's Cove, and the Cabot Trail.

Outdoor Recreation: Nova Scotia's "accessible wilderness" of lakes, rivers, streams, hiking trails and beaches make up another key element in the tourism plant, providing visitors with a variety of recreational opportunities from bird-watching to board-sailing.

There are 33 rivers in Nova Scotia that offer Atlantic Salmon runs from mid-June to mid-October. There are many other lakes and rivers where brook trout, sea trout, rainbow trout, brown trout, gray trout, and shad may be fished.

More than 40 deep-sea fishing boats operate charter services from ports along the Nova Scotia coast, and hunters may avail themselves of the experience of 10 hunting outfitters specializing in bear, white-tail deer, and upland game birds.

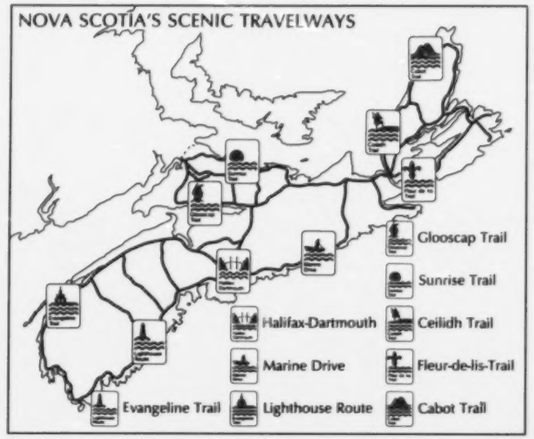
Examination of the map facing this page will reveal still more recreational resources. Among them are some 40 golf courses; 17 yacht clubs; 7 canoe outfitters; 6 downhill skiing areas; and hundreds of miles of cross-country skiing and snowmobiling trails.

Nova Scotia's beaches are public property, and visitors may swim and picnic at any of the 14 supervised beach parks around the province, or find their own secluded stretch of sand.

A Special Lifestyle: Nova Scotia's maritime lifestyle is also a part of the tourism resource, providing visitors with a vacation experience that, for many, is something different, foreign, unique.

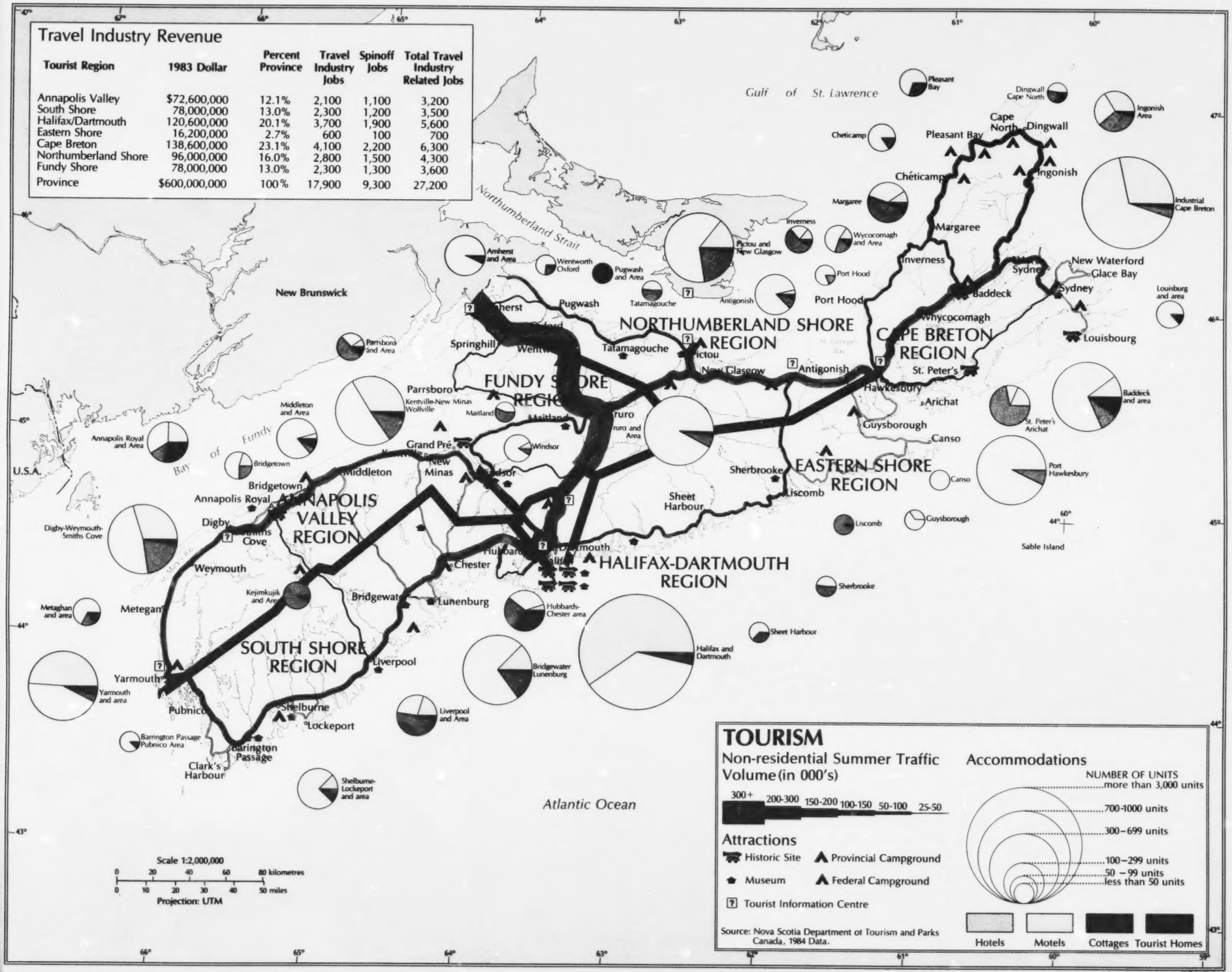
Examples of lifestyle as part of the tourism resource include a Scottish concert in Cape Breton, rockweed gathering on the South Shore, the firing of the noon gun at the Halifax Citadel, lobster suppers, highland games, dory races, ox pulls, and all the richness of the language, food, customs and folklore of Nova Scotia.

These lifestyle elements are best experienced through the more than 350 annual summer festivals and events that are held in the province every year. Some of them, like the Antigonish Highland Games, the International Town Crier Championship in Halifax, and the Nova Scotia Fisheries Exhibition in Lunenburg have become tourist attractions in their own right.



Travel Industry Revenue

Tourist Region	1983 Dollar	Percent Province	Travel Industry Jobs	Spinoff Jobs	Total Travel Industry Related Jobs
Annapolis Valley	$72,600,000	12.1%	2,100	1,100	3,200
South Shore	78,000,000	13.0%	2,300	1,200	3,500
Halifax/Dartmouth	120,600,000	20.1%	3,700	1,900	5,600
Eastern Shore	16,200,000	2.7%	600	100	700
Cape Breton	138,600,000	23.1%	4,100	2,200	6,300
Northumberland Shore	96,000,000	16.0%	2,800	1,500	4,300
Fundy Shore	78,000,000	13.0%	2,300	1,300	3,600
Province	$600,000,000	100%	17,900	9,300	27,200



TOURISM

Non-residential Summer Traffic Volume (in 000's)

300+ 200-300 150-200 100-150 50-100 25-50

Attractions

- Historic Site
- Museum
- Tourist Information Centre
- Provincial Campground
- Federal Campground

Accommodations

NUMBER OF UNITS

- more than 3,000 units
- 700-1000 units
- 300–699 units
- 100–299 units
- 50 – 99 units
- less than 50 units

Hotels Motels Cottages Tourist Homes

Source: Nova Scotia Department of Tourism and Parks Canada, 1984 Data.

Recreational Resources

It has long been recognized that recreational and cultural opportunities play a vitally important role in a healthy, well-balanced society. To minister to the need for the development of sport, recreation, cultural, and fitness opportunities, the Province of Nova Scotia established the Department of Culture, Recreation and Fitness with a duty "to initiate, conduct, and encourage ... the orderly development of recreation, sport, and cultural activities ... for any class or classes of persons within the Province."

In the ten years since proclamation of the original act, the Department has developed and matured, defining and refining policies and programmes to meet its mandate efficiently and effectively. With its main offices in Halifax, regional locations in Dartmouth, Windsor, Bridgewater, Truro, Antigonish, and Sydney, and a Cape Breton satellite office in Port Hawkesbury, the Department is well situated to carry out its mandate through three areas:

- Sport and Community Services
- Cultural Affairs
- Administration

Through these three divisions, it maintains a close working relationship with hundreds of client groups and organizations in virtually every community in the province. The multitude of services provided by the Department can be categorized into five basic types.

Financial Assistance: Through a variety of funding programmes, the Department works to develop a strong recreation, sport, and cultural base, to help provide facilities for recreation, and to offer a broad range of opportunities for enriching the quality of life of Nova Scotians.

Resource Materials: The Department works to ensure that the necessary resources are available to individuals, groups, and organizations who are embarking upon long or short-term projects in sport, recreation, or cultural affairs. Its operations are based on the philosophy that public recreation dollars are most effectively spent through municipalities, where the unique needs of a community can be addressed directly.

Advisory and Consultative Services: Professionals in each of the Department's areas of responsibility are available upon request to meet and work with individual clients, groups and organizations. Whether the need is for information on policies and programmes, or assistance with the development of innovative approaches to community sport, recreational and cultural concerns, the emphasis is on effective delivery of services.

Direct and Cooperative Programming: Where there is a widespread requirement, the Department may attempt to meet it through direct programming. Such provincial programmes are tailored to regional needs and administered through regional offices. Frequently the Department will work in close collaboration with other agencies or organizations to achieve the success of a joint project.

Recreational Facility Development: Quality facilities, be they for sport, general recreation, or cultural activity, are important to the fostering of all sorts of leisure activities in the province. The Recreational Facility Development Section administers those policy areas which deal with the Department's financial and consultative input in both the installation and renovation of facilities. The programme emphasizes community involvement and commitment in facility planning and development, and efficient maintenance and operation. One method of attaining this goal is through innovative leadership training for facility directors.

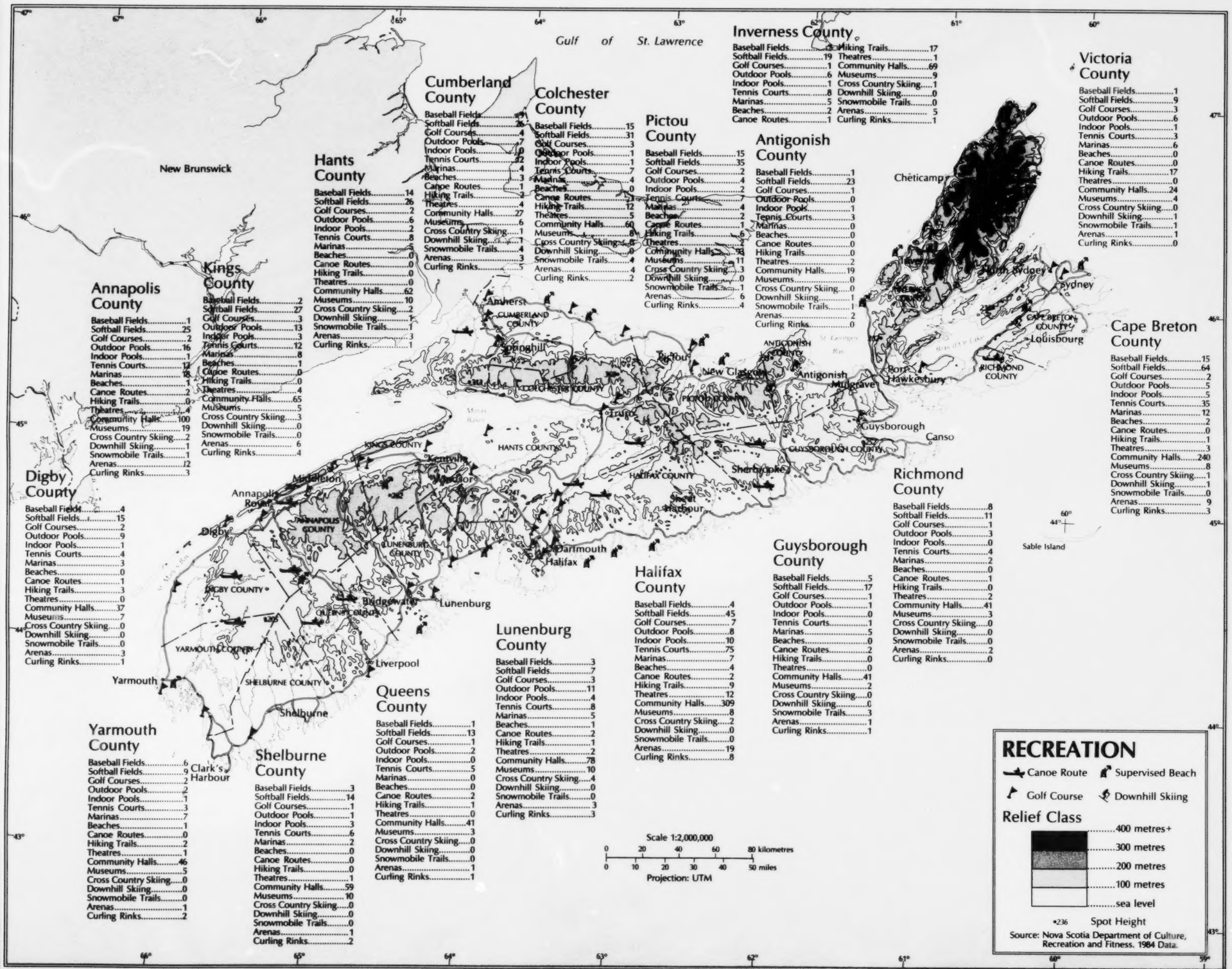
Nova Scotia boasts a wide variety of recreational resources and facilities. While some have been part of the community life of provincial towns and centres for years, many others are new, and designed to meet the challenges and demands of a clientele with changing leisure time needs and expectations.

In order to identify all existing recreational facilities and resources, a descriptive inventory was recently undertaken. The results revealed the very healthy state of affairs which is illustrated by the adjacent map. Although the population of the province falls short of one million people, it can boast recreational facilities that would be a credit to a much larger community.

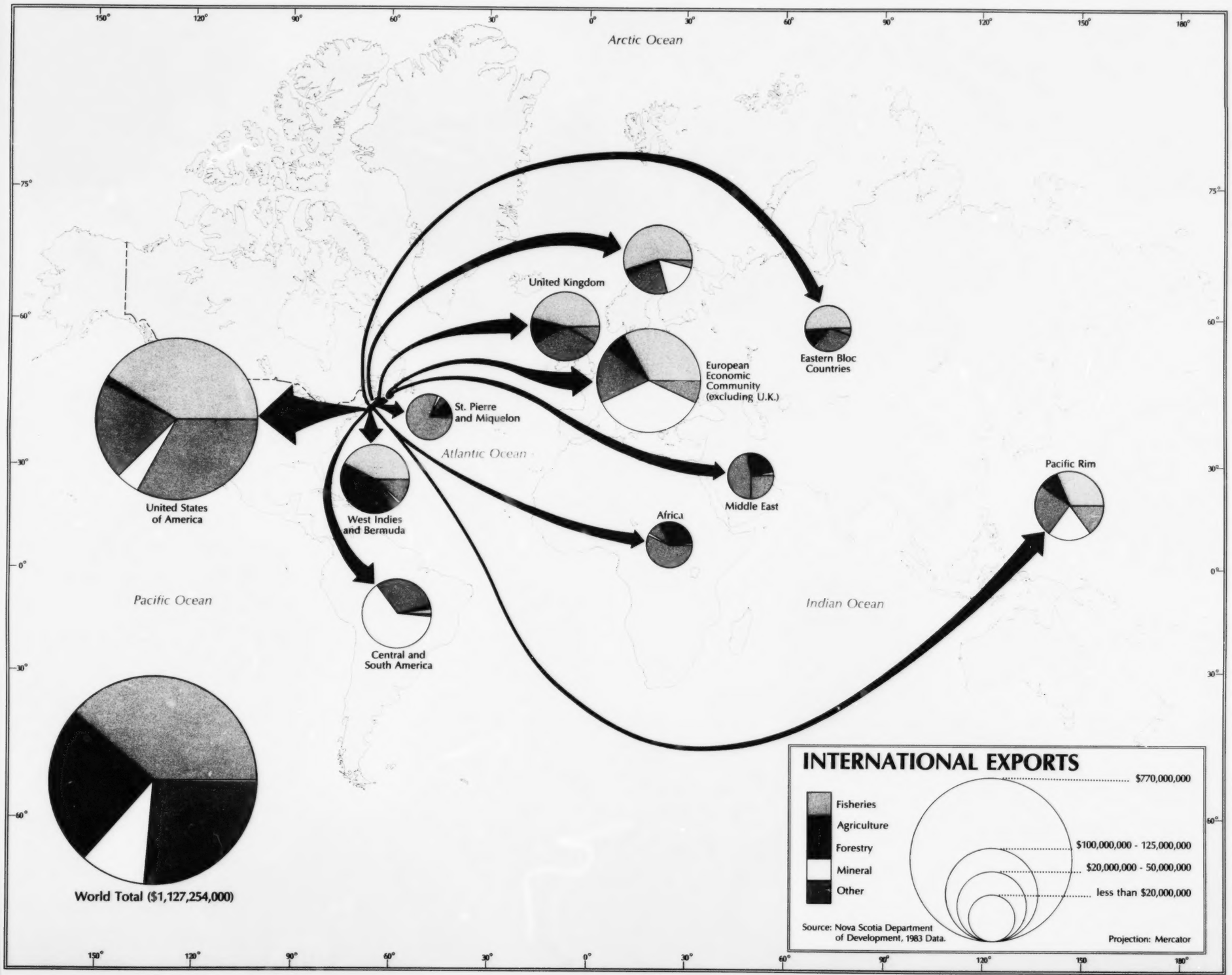
To ensure that 14 of the most popular beach areas in the province are safe for family enjoyment, the Department and the Canadian Red Cross Society co-operate to provide a high-quality lifeguard service, and water safety information, during the peak vacation season.

For canoeists, waterproof maps of 15 of the province's best waterways graded from Beginner to Expert class, are available from the government bookstore in Halifax. In winter, cross-country skiers and snowmobilers can enjoy hundreds of miles of marked trails.

Considering the strong influence of Scottish settlers upon Nova Scotia's development, it is perhaps not surprising that there should be 37 curling rinks and 54 golf courses. A jurisdiction with over 4,000 miles of coastline could perhaps be expected to have 133 marinas. And when a large proportion of the population lives in smaller towns and villages, the presence of 1,565 community halls may be nothing more than a testimonial to a lively community spirit. Nonetheless, it must be concluded that any province this size with 41 hiking trails, 45 public swimming pools, and 142 museums demonstrates a remarkable appreciation of its health and its heritage. The contribution of recreation to a humane lifestyle is amply recognized in Nova Scotia.


Gulf of St. Lawrence
New Brunswick
Annapolis County
Baseball Fields....1
Softball Fields....25
Golf Courses....2
Outdoor Pools....16
Indoor Pools....1
Tennis Courts....12
Marinas....18
Beaches....1
Canoe Routes....2
Hiking Trails....0
Theatres....4
Community Halls....100
Museums....19
Cross Country Skiing....2
Downhill Skiing....1
Snowmobile Trails....1
Arenas....12
Curling Rinks....3
Kings County
Baseball Fields....2
Softball Fields....27
Golf Courses....3
Outdoor Pools....13
Indoor Pools....3
Tennis Courts....12
Marinas....8
Beaches....1
Canoe Routes....0
Hiking Trails....0
Theatres....4
Community Halls....65
Museums....5
Cross Country Skiing....3
Downhill Skiing....0
Snowmobile Trails....0
Arenas....6
Curling Rinks....4
Hants County
Baseball Fields....14
Softball Fields....26
Golf Courses....2
Outdoor Pools....6
Indoor Pools....2
Tennis Courts....8
Marinas....5
Beaches....0
Canoe Routes....0
Hiking Trails....0
Theatres....0
Community Halls....62
Museums....10
Cross Country Skiing....2
Downhill Skiing....1
Snowmobile Trails....1
Arenas....3
Curling Rinks....1
Cumberland County
Baseball Fields....31
Softball Fields....26
Golf Courses....4
Outdoor Pools....7
Indoor Pools....0
Tennis Courts....12
Marinas....4
Beaches....3
Canoe Routes....1
Hiking Trails....2
Theatres....4
Community Halls....27
Museums....6
Cross Country Skiing....1
Downhill Skiing....1
Snowmobile Trails....4
Arenas....3
Curling Rinks....5
Colchester County
Baseball Fields....15
Softball Fields....31
Golf Courses....3
Outdoor Pools....1
Indoor Pools....1
Tennis Courts....7
Marinas....4
Beaches....0
Canoe Routes....1
Hiking Trails....12
Theatres....5
Community Halls....60
Museums....8
Cross Country Skiing....6
Downhill Skiing....0
Snowmobile Trails....4
Arenas....4
Curling Rinks....2
Pictou County
Baseball Fields....15
Softball Fields....35
Golf Courses....2
Outdoor Pools....4
Indoor Pools....2
Tennis Courts....7
Marinas....4
Beaches....2
Canoe Routes....1
Hiking Trails....6
Theatres....2
Community Halls....93
Museums....11
Cross Country Skiing....3
Downhill Skiing....0
Snowmobile Trails....1
Arenas....6
Curling Rinks....4
Antigonish County
Baseball Fields....1
Softball Fields....23
Golf Courses....1
Outdoor Pools....0
Indoor Pools....1
Tennis Courts....3
Marinas....0
Beaches....0
Canoe Routes....0
Hiking Trails....0
Theatres....2
Community Halls....19
Museums....0
Cross Country Skiing....0
Downhill Skiing....1
Snowmobile Trails....1
Arenas....2
Curling Rinks....0
Inverness County
Baseball Fields....3
Softball Fields....19
Golf Courses....1
Outdoor Pools....6
Indoor Pools....1
Tennis Courts....8
Marinas....5
Beaches....2
Canoe Routes....1
Hiking Trails....17
Theatres....1
Community Halls....69
Museums....9
Cross Country Skiing....1
Downhill Skiing....0
Snowmobile Trails....0
Arenas....5
Curling Rinks....1
Victoria County
Baseball Fields....1
Softball Fields....9
Golf Courses....3
Outdoor Pools....6
Indoor Pools....1
Tennis Courts....3
Marinas....6
Beaches....0
Canoe Routes....0
Hiking Trails....17
Theatres....0
Community Halls....24
Museums....4
Cross Country Skiing....0
Downhill Skiing....1
Snowmobile Trails....1
Arenas....1
Curling Rinks....0
Cape Breton County
Baseball Fields....15
Softball Fields....64
Golf Courses....2
Outdoor Pools....5
Indoor Pools....5
Tennis Courts....35
Marinas....12
Beaches....2
Canoe Routes....0
Hiking Trails....1
Theatres....3
Community Halls....240
Museums....8
Cross Country Skiing....1
Downhill Skiing....1
Snowmobile Trails....0
Arenas....9
Curling Rinks....3
Digby County
Baseball Fields....4
Softball Fields....15
Golf Courses....2
Outdoor Pools....9
Indoor Pools....1
Tennis Courts....4
Marinas....3
Beaches....0
Canoe Routes....1
Hiking Trails....3
Theatres....0
Community Halls....37
Museums....7
Cross Country Skiing....0
Downhill Skiing....0
Snowmobile Trails....0
Arenas....3
Curling Rinks....1
Yarmouth County
Baseball Fields....6
Softball Fields....9
Golf Courses....2
Outdoor Pools....2
Indoor Pools....1
Tennis Courts....3
Marinas....7
Beaches....1
Canoe Routes....0
Hiking Trails....2
Theatres....1
Community Halls....46
Museums....5
Cross Country Skiing....0
Downhill Skiing....0
Snowmobile Trails....0
Arenas....1
Curling Rinks....2
Shelburne County
Baseball Fields....3
Softball Fields....14
Golf Courses....1
Outdoor Pools....1
Indoor Pools....3
Tennis Courts....6
Marinas....2
Beaches....0
Canoe Routes....0
Hiking Trails....0
Theatres....1
Community Halls....59
Museums....10
Cross Country Skiing....0
Downhill Skiing....0
Snowmobile Trails....0
Arenas....1
Curling Rinks....2
Queens County
Baseball Fields....1
Softball Fields....13
Golf Courses....1
Outdoor Pools....2
Indoor Pools....0
Tennis Courts....5
Marinas....0
Beaches....0
Canoe Routes....2
Hiking Trails....1
Theatres....0
Community Halls....41
Museums....3
Cross Country Skiing....0
Downhill Skiing....0
Snowmobile Trails....0
Arenas....1
Curling Rinks....1
Lunenburg County
Baseball Fields....3
Softball Fields....7
Golf Courses....3
Outdoor Pools....11
Indoor Pools....4
Tennis Courts....8
Marinas....5
Beaches....1
Canoe Routes....2
Hiking Trails....1
Theatres....2
Community Halls....78
Museums....10
Cross Country Skiing....4
Downhill Skiing....0
Snowmobile Trails....0
Arenas....3
Curling Rinks....3
Halifax County
Baseball Fields....4
Softball Fields....45
Golf Courses....7
Outdoor Pools....8
Indoor Pools....10
Tennis Courts....75
Marinas....7
Beaches....4
Canoe Routes....2
Hiking Trails....9
Theatres....12
Community Halls....309
Museums....8
Cross Country Skiing....2
Downhill Skiing....0
Snowmobile Trails....0
Arenas....19
Curling Rinks....8
Guysborough County
Baseball Fields....5
Softball Fields....17
Golf Courses....1
Outdoor Pools....1
Indoor Pools....0
Tennis Courts....1
Marinas....5
Beaches....0
Canoe Routes....2
Hiking Trails....0
Theatres....0
Community Halls....41
Museums....2
Cross Country Skiing....0
Downhill Skiing....0
Snowmobile Trails....3
Arenas....1
Curling Rinks....1
Richmond County
Baseball Fields....8
Softball Fields....11
Golf Courses....1
Outdoor Pools....3
Indoor Pools....0
Tennis Courts....4
Marinas....2
Beaches....0
Canoe Routes....1
Hiking Trails....0
Theatres....2
Community Halls....41
Museums....3
Cross Country Skiing....0
Downhill Skiing....0
Snowmobile Trails....0
Arenas....2
Curling Rinks....0
Amherst
CUMBERLAND COUNTY
Springhill
Pictou
New Glasgow
ANTIGONISH COUNTY
Antigonish
Mulgrave
Port Hawkesbury
RICHMOND COUNTY
Louisbourg
CAPE BRETON COUNTY
North Sydney
Sydney
Chéticamp
Truro
COLCHESTER COUNTY
PICTOU COUNTY
KINGS COUNTY
Kentville
Wolfville
HANTS COUNTY
Middleton
Annapolis Royal
ANNAPOLIS COUNTY
Digby
DIGBY COUNTY
Bridgetown
QUEENS COUNTY
Lunenburg
LUNENBURG COUNTY
HALIFAX COUNTY
Dartmouth
Halifax
Sherbrooke
Guysborough
Canso
GUYSBOROUGH COUNTY
Sheet Harbour
Liverpool
YARMOUTH COUNTY
Yarmouth
SHELBURNE COUNTY
Shelburne
Clark's Harbour
Sable Island
Scale 1:2,000,000
0 20 40 60 80 kilometres
0 10 20 30 40 50 miles
Projection: UTM
RECREATION
Canoe Route
Supervised Beach
Golf Course
Downhill Skiing
Relief Class
400 metres+
300 metres
200 metres
100 metres
sea level
•236 Spot Height
Source: Nova Scotia Department of Culture, Recreation and Fitness. 1984 Data.
66°
65°
64°
63°
62°
61°
60°
47°
46°
45°
44°
43°

RECREATION



INTERNATIONAL EXPORTS

Nova Scotia Fact Sheet

	Annapolis County	Antigonish County	Cape Breton County	Colchester County	Cumberland County	Digby County	Guysborough County	Halifax County	Hants County	Inverness County	Kings County	Lunenburg County	Pictou County	Queens County	Richmond County	Shelburne County	Victoria County	Yarmouth County	Nova Scotia
Land Area (square kilometres)	3,203.66	1,461.39	2,472.91	3,622.33	4,288.18	2,472.48	4,380.75	5,557.29	3,054.74	3,696.99	2,182.24	2,880.44	2,774.42	2,367.71	1,230.20	2,356.52	2,767.87	2,070.71	52,840.83
Total Area (in hectares)	338,530	145,569	260,336	365,800	435,100	266,690	425,536	590,935	317,442	387,985	233,160	312,150	289,100	276,720	131,101	258,960	292,930	232,020	5,550,310
% Forested Land	79.1	75.9	76.7	77.9	74.1	80.8	70.5	74.6	76.3	86.5	67.9	74.2	75.1	58.2	80.6	69.9	79.7	64.7	74.9
% Non-Forested Land*	13.4	21.9	17.6	19.5	22.7	12.4	21.6	14.2	18.1	16.6	28.1	12.3	20.5	15.0	13.4	20.8	18.1	20.8	17.2
% Water and Flowage	7.5	2.2	9.6	2.5	3.1	6.4	7.9	11.2	5.6	2.4	3.9	13.5	4.3	26.8	7.9	9.3	4.4	14.5	7.9
Population Density (per square kilometre)	7.0	12.4	51.4	11.9	8.2	8.8	2.9	51.8	10.8	6.0	22.8	15.9	18.1	5.5	10.0	7.4	3.0	12.7	16.0
Population																			
1971 Census	21,841	16,814	129,075	37,735	35,160	20,349	12,864	261,461	28,935	20,375	44,975	38,422	46,104	12,950	12,734	16,661	7,823	24,682	788,960
1976 Census	23,208	17,573	128,229	41,771	35,914	20,932	12,825	278,531	32,383	21,773	47,977	42,388	49,076	12,947	12,447	16,970	8,417	25,210	828,571
1981 Census	22,522	18,110	127,035	43,224	35,231	21,689	12,752	288,126	33,121	22,337	49,739	45,746	50,350	13,126	12,284	17,328	8,432	26,290	847,442
1985 Estimate	23,000	19,100	129,100	45,600	35,700	22,400	13,100	301,300	36,200	22,900	53,900	46,900	51,400	13,700	12,400	17,900	8,800	27,400	880,700
Population by Age—1981																			
Under 1	310	345	1,780	565	450	255	185	4,070	450	335	770	585	770	145	180	250	115	370	11,940
1—4	1,130	1,360	7,405	2,365	1,740	1,085	735	16,310	1,975	1,475	2,885	2,445	3,215	655	745	1,055	530	1,475	48,585
5—9	1,660	1,775	10,430	3,405	2,510	1,560	1,075	21,295	2,890	1,990	3,840	3,255	4,270	965	1,110	1,390	650	1,955	66,040
10—14	1,835	1,845	11,565	3,685	2,935	1,945	1,280	22,600	3,035	2,230	4,280	3,560	4,365	1,105	1,275	1,475	705	2,210	71,930
15—19	2,310	1,990	14,280	4,355	3,525	2,310	1,410	27,965	3,400	2,335	5,060	4,085	4,825	1,255	1,360	1,735	890	2,670	85,750
20—24	1,730	1,495	11,120	3,760	2,740	1,765	930	31,385	2,660	1,755	4,550	3,920	4,265	1,000	910	1,575	680	2,180	78,420
25—29	1,540	1,385	9,785	3,370	2,440	1,510	835	28,735	2,575	1,590	3,975	3,700	3,980	900	870	1,395	615	1,985	71,170
30—34	1,560	1,425	9,090	3,295	2,385	1,550	880	26,395	2,705	1,735	3,845	3,605	3,870	970	900	1,345	625	2,005	68,190
35—39	1,365	1,075	7,165	2,675	1,945	1,205	700	19,980	2,170	1,365	3,190	2,870	2,975	810	715	990	490	1,520	53,205
40—44	1,185	820	6,395	2,235	1,795	1,035	580	15,560	1,805	1,145	2,750	2,335	2,290	700	555	865	370	1,195	43,625
45—49	1,150	685	6,040	2,140	1,715	995	595	14,250	1,550	1,000	2,580	2,220	2,130	670	565	815	365	1,120	40,565
50—54	1,130	665	5,975	2,085	1,715	1,025	585	13,070	1,525	915	2,240	2,250	2,250	640	565	795	410	1,215	39,050
55—59	1,150	715	6,335	2,020	1,950	1,110	560	12,390	1,425	985	2,170	2,295	2,355	645	520	815	390	1,325	39,160
60—64	1,105	725	5,950	1,995	1,965	1,225	600	10,665	1,390	935	2,090	2,300	2,455	730	545	795	435	1,350	37,260
65+	3,365	1,810	13,705	5,275	5,400	3,115	1,795	23,450	3,565	2,570	5,525	6,320	6,350	1,930	1,475	2,025	1,150	3,710	92,550
Population by sex—1981																			
Males	11,235	9,025	62,565	21,295	17,580	10,835	6,475	141,260	16,535	11,325	24,600	22,970	25,040	6,640	6,200	8,795	4,295	12,900	419,575
Females	11,290	9,080	64,465	21,930	17,650	10,855	6,280	146,865	16,585	11,015	25,140	22,775	25,310	6,465	6,085	8,530	4,140	13,390	427,870
Population by Age & Sex—1981																			
Males																			
Total	11,235	9,025	62,565	21,295	17,580	10,835	6,475	141,260	16,535	11,325	24,600	22,970	25,040	6,640	6,200	8,795	4,295	12,900	419,575
% 0-14	22.5	30.5	25.7	23.7	22.4	23.1	25.8	23.3	25.7	27.1	24.5	22.1	25.8	22.0	27.3	24.8	24.0	24.0	24.2
% 15-24	18.9	19.6	20.5	19.3	19.2	19.1	18.7	21.0	18.7	18.6	19.8	18.0	18.6	18.2	18.1	19.5	19.2	18.7	19.8
% 25-44	25.1	26.1	26.1	27.1	24.9	24.7	23.7	31.5	28.0	26.4	27.8	27.9	27.0	26.0	24.8	26.9	25.1	25.9	28.1
% 45-64	19.9	15.0	18.4	19.1	19.9	19.6	18.6	17.4	17.8	16.8	18.2	19.6	17.6	19.6	18.1	18.1	18.9	18.7	18.1
% 65+	13.5	9.0	9.4	10.8	13.7	13.6	13.3	6.8	9.8	11.1	9.8	12.4	11.0	14.1	11.8	10.7	12.9	12.7	9.7
Females																			
Total	11,290	9,080	64,465	21,930	17,650	10,855	6,280	146,865	16,585	11,015	25,140	22,775	25,310	6,485	6,085	8,530	4,140	13,390	427,870
% 0-14	21.4	28.3	23.5	22.6	21.0	21.6	25.6	21.3	24.7	27.0	22.9	21.0	24.3	21.5	26.6	23.4	23.7	21.8	22.6
% 15-24	17.0	19.0	19.5	18.3	16.5	18.5	18.0	20.2	17.8	17.9	18.9	17.0	17.6	16.1	18.7	18.6	18.2	18.2	18.9
% 25-44	25.1	25.8	25.0	26.5	23.7	24.2	23.2	31.4	27.9	25.8	27.5	26.8	25.1	25.6	24.7	26.1	24.8	25.1	27.6
% 45-64	20.3	15.9	19.8	19.0	21.8	20.5	18.2	17.6	17.7	17.5	18.3	20.0	18.9	21.3	17.7	19.1	19.0	19.4	18.7
% 65+	16.3	11.0	12.2	13.6	17.0	14.2	15.0	9.4	11.8	11.9	12.4	15.3	14.2	15.3	12.3	12.7	14.5	15.5	12.2
Vital Statistics—1983																			
Live Births	310	326	1,814	615	463	277	189	4,439	502	337	716	578	758	154	164	247	144	365	12,401
Deaths	206	123	1,203	355	413	231	141	1,906	274	201	366	385	481	162	109	144	95	251	7,047
Natural Increase	104	203	611	260	50	46	48	2,533	228	136	350	193	277	-8	55	103	49	114	5,354
Pop. by Marital Status—1981																			
Single (never married)	9,265	9,785	61,160	18,625	14,680	9,370	6,040	131,660	14,670	11,395	21,590	18,195	22,610	5,235	6,045	7,395	3,985	11,300	383,005
—under 15 yrs.	4,940	5,325	31,180	10,015	7,645	4,845	3,275	64,280	8,350	6,035	11,775	9,845	12,615	2,870	3,310	4,170	2,005	6,015	198,495
—16 and over	4,325	4,465	29,975	8,610	7,040	4,525	2,765	67,380	6,320	5,360	9,820	8,355	9,990	2,360	2,730	3,220	1,980	5,290	184,515
Married	11,135	7,160	54,375	20,495	16,590	10,215	5,620	131,485	15,730	9,320	23,805	23,315	22,965	6,680	5,310	8,500	3,700	12,475	388,885
Separated	350	185	1,950	685	530	380	165	5,450	435	270	830	590	705	165	175	225	110	440	13,620
Widowed	1,385	840	7,735	2,515	2,600	1,385	825	12,305	1,765	1,190	2,545	2,765	3,050	820	660	945	555	1,580	45,485
Divorced	385	140	1,825	900	830	340	100	7,225	515	160	970	880	1,020	230	95	260	85	490	16,450
Average No. of Persons per Family	3.2	3.9	3.6	3.3	3.2	3.3	3.5	3.3	3.4	3.7	3.3	3.1	3.4	3.2	3.7	3.3	3.5	3.3	3.3

Source: Statistics Canada, 1981 Census of Canada.

* includes non-forested land, non-productive forest, and urban and agricultural land

	Annapolis County	Antigonish County	Cape Breton County	Colchester County	Cumberland County	Digby County	Guysborough County	Halifax County	Hants County	Inverness County	Kings County	Lunenburg County	Pictou County	Queens County	Richmond County	Shelburne County	Victoria County	Yarmouth County	Nova Scotia
Place of Birth																			
Nova Scotia	17,355	15,545	4,260	35,500	28,325	18,910	11,695	209,010	28,805	19,070	38,670	38,950	42,300	11,400	11,030	15,325	7,415	22,965	684,100
Other Provinces	3,540	1,630	605	5,530	4,830	1,640	715	56,505	2,965	2,135	7,885	4,655	5,475	1,095	880	1,255	615	2,075	113,985
Outside Canada	1,380	820	225	1,855	1,230	970	270	20,575	1,050	945	2,625	1,830	1,990	545	290	580	335	980	41,715
Religion																			
% Catholic	12.7	81.5	77.4	13.2	18.8	55.2	40.9	37.3	15.3	72.0	12.6	9.3	28.9	10.9	86.0	7.4	41.8	53.8	36.7
% Protestant	79.3	15.7	17.0	81.4	74.7	38.7	56.3	55.0	79.7	25.5	79.3	83.3	67.0	84.3	12.4	86.0	54.4	41.1	57.5
% Other	8.0	2.8	5.6	5.4	6.5	6.1	2.8	7.7	5.0	2.5	8.1	7.4	4.1	4.8	1.6	6.6	3.8	5.1	5.8
Ethnic Origin																			
% British	76.3	74.3	78.3	83.8	79.9	47.5	95.8	91.7	80.3	70.1	76.3	48.0	80.0	68.7	39.2	83.0	82.1	52.6	71.8
% French	3.9	12.1	5.7	2.7	7.3	40.2	-	0.1	2.7	18.6	3.7	4.6	4.8	3.1	45.3	2.4	3.8	35.9	8.4
% Other	10.7	5.5	7.7	6.6	4.3	4.2	3.6	7.3	8.9	4.7	10.4	36.5	6.4	18.6	4.0	6.7	6.3	2.9	10.3
% Multiple Origins	8.1	7.5	7.4	6.1	6.1	7.3		0.2	7.2	5.8	8.5	10.2	7.6	8.9	10.7	7.0	6.9	7.6	8.6
Rural & Urban Population																			
% Rural	83.1	71.2	24.3	53.4	49.3	88.2	81.5	21.3	84.8	74.5	58.0	71.2	44.0	52.9	92.0	75.2	100.0	71.6	44.9
—% Non-Farm	77.1	65.1	23.8	49.0	43.7	84.7	79.3	21.0	80.1	71.6	52.3	68.1	40.6	51.2	90.4	74.6	97.5	69.8	42.8
—% Farm	6.0	6.1	0.5	4.4	5.6	3.5	2.2	0.3	4.7	2.9	5.7	3.1	3.4	1.7	1.6	0.6	2.5	1.8	2.1
% Urban	16.9	28.8	75.7	46.6	50.7	11.8	18.5	78.7	15.2	25.5	42.0	28.8	56.0	47.1	8.0	24.8	0.0	28.4	55.1
Labour Force																			
Total Labour Force	9,470	7,420	49,695	19,540	13,975	8,980	4,680	147,800	13,865	8,870	21,840	19,940	21,150	5,355	4,365	7,095	3,555	10,895	378,495
—Employed	8,550	6,575	42,110	17,720	12,330	7,930	4,050	136,875	12,540	7,400	19,685	18,460	19,200	4,900	3,510	6,400	2,710	9,800	340,755
—Unemployed	920	845	7,590	1,820	1,645	1,055	630	10,930	1,325	1,470	2,155	1,480	1,950	445	850	695	845	1,090	37,740
Unemployed Rate—%	9.7	11.4	15.3	9.3	11.8	11.7	13.5	7.4	9.6	16.6	9.9	7.4	9.2	8.3	19.5	9.8	23.8	10.0	10.0
Participation Rate—%	54.6	58.5	52.5	59.4	52.3	53.8	49.8	66.6	56.6	55.1	58.3	56.0	56.9	52.7	49.1	54.6	55.9	54.4	59.0
Incomes																			
Average Family Income	$19,130	$21,823	$20,551	$20,831	$18,089	$17,995	$17,544	$25,603	$19,854	$18,172	$19,480	$20,887	$20,642	$19,138	$18,101	$19,827	$18,624	$19,758	$21,872
Average Household Income	17,538	20,177	19,892	18,941	16,650	16,797	16,142	23,569	18,908	18,011	18,331	19,675	19,147	18,165	17,417	18,558	17,420	18, 636	20,476
Average of Non-Family Persons	7,539	7,400	7,470	7,972	7,218	6,536	6,217	10,569	7,625	8,797	8,412	8,561	7,983	7,528	6,381	7,170	7,305	7,587	8,804
Dwelling Units																			
Total	7,550	4,980	36,815	14,540	11,830	7,030	3,900	97,295	10,305	6,380	16,300	15,720	15,995	4,420	3,450	5,540	2,595	8,555	273,195
—Owned	6055	4,020	28,955	10,755	9,460	5,885	3,470	55,215	8,620	5,415	11,465	12,945	12,550	3,790	3,070	4,735	2,280	6,625	195,310
—Rented	1,500	955	7,855	3,780	2,375	1,145	435	42,080	1,685	960	4,840	2,780	3,450	630	385	805	320	1,930	77,885
Occupied Private Dwellings																			
% built before 1946	51.8	32.4	44.2	37.2	54.4	51.2	47.4	22.1	35.1	36.4	35.0	41.3	49.1	51.6	39.1	43.1	39.9	51.5	35.9
% built 1946—1960	15.6	11.0	19.5	16.7	13.8	14.7	12.2	21.0	17.1	9.8	20.5	14.8	12.3	15.5	15.6	16.1	17.3	11.5	17.7
% built 1961—1970	10.2	18.5	10.6	15.2	8.7	9.3	13.6	22.0	15.4	19.0	15.5	13.5	11.0	11.8	13.8	15.1	14.3	11.4	16.0
% built 1971—1981	22.4	38.2	25.6	30.8	23.1	24.8	26.7	34.9	32.3	34.6	29.1	30.3	27.5	21.3	31.4	25.7	28.5	25.6	30.3
Building Permits—(1984)																			
No. of Dwelling Units																			
Singles & Doubles	131	85	465	292	154	60	91	1,900	340	86	330	122	215	87	68	66	73	110	4,675
Other	17	—	123	35	8	15	1	937	32	—	70	—	18	9	—	20	—	6	1,291
Total	148	85	588	327	162	75	92	2,837	372	86	400	122	233	96	68	86	73	116	5,966
Shopping Centres	0	1	6	3	3	1	0	19	2	2	3	3	3	0	0	1	0	3	50
Traveller Accommodations																			
No. of Hotel Rooms	—	—	288	—	3	101	—	2,946	—	—	—	30	50	—	13	17	32	138	3,618
No. of Motel Rooms	178	221	551	410	270	255	75	822	86	356	358	315	231	103	16	109	464	307	5,127
No. of Guest House Rms.	88	14	26	—	19	51	10	49	6	22	10	66	12	12	—	9	194	40	628
No. of Cottages & Cabins	51	10	25	10	32	78	11	74	—	150	44	24	40	54	45	10	105	12	775
Total Units	317	245	890	420	324	485	96	3,891	92	528	412	435	333	169	74	145	795	497	10,148
Schools																			
Number of Schools	21	17	100	33	26	16	14	168	24	19	23	28	31	10	14	13	11	16	584
Number of Teachers	273	279	1,639	531	408	267	187	3,693	448	328	695	511	644	154	191	195	113	267	10,823
Enrollment																			
Elementary	2,295	2,521	13,670	4,408	3,371	2,069	1,474	28,657	4,447	2,643	5,546	4,527	5,710	1,375	1,404	1,948	1,058	2,069	89,192
Junior High	1,163	1,147	6,912	2,206	1,601	1,207	735	13,381	2,055	1,249	2,685	2,139	2,700	697	705	845	367	1,207	43,001
Senior High	796	1,044	5,835	1,959	1,507	889	580	12,416	1,442	1,146	2,243	1,740	2,087	556	644	607	254	889	36,634
Other	70	114	950	476	364	74	89	1,251	165	112	567	283	511	42	208	57	36	74	5,443
Total	4,324	4,826	27,367	9,049	6,843	4,239	2,878	55,705	8,099	5,150	11,041	8,689	11,008	2,670	2,961	3,457	1,715	4,239	174,260
Libraries	4	3	11	5	4	4	3	32	2	2	7	2	5	1	1	4	1	3	94
Art Galleries/Museums	9	1	8	4	6	4	3	15	7	9	4	9	4	1	2	7	7	3	103
Radio Stations	3	1	6	1	1	2	2	15	1	3	3	1	1	0	1	1	0	3	45
Newspapers	5	1	2	2	4	2	0	12	1	2	6	3	2	1	1	2	0	5	51

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